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Computer Weekly

Thursday, February 18, 1982

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cuts cost of processing

by Philip Hunter
WHILE the market waits for expansion at both ends of the VAX range of minicomputers, DEC has cut the cost of processing power by introducing a twin coupled version of the VAX 11/780.

Called the VAX 11/782, DEC claims it offers 80 per cent more performance for just 30 per cent more money. It is aimed at users which have outgrown the existing VAX range.

There is also a false element in that if one processor fails, a reduced service can still be run from the other. But it does not offer true resilience, since the disc drive system, which is the commonest cause of hardware failure, is not duplicated.

Major VAX users seem unexcited by the new system. "It will have little impact on us and our users," says Mark Woolson, technical consultant with Systime.

Woolson sees the VAX 11/782 as a marketing move to enable DEC to delay introduction of genuinely new VAX machines.

"DEC eventually wants VAX machines to cover the broadest possible spectrum and this is creating marketing problems," he explains.

At the bottom end VAX machines are encroaching on the PDP range, which DEC is not yet ready to drop. It has yet to recoup substantial investments in software. At the top end, a VAX signal is clearly bigger and faster than the VAX 780 would compete with the larger DEC 10.

Woolson feels that DEC will wait until both it and users are ready for an expansion of the VAX range on both fronts. In the meantime users are being offered the VAX 782 as a stopgap.

The VAX 11/782 costs £275,000 and an upgrade kit to convert a 780 into a 782 is available for £125,000.



SHOULTS... auditing standard is absolutely necessary.

Standard may outlaw financial packages

by Boris Sedacca
SOFTWARE vendors supplying financial applications without adequate audit controls could soon find themselves out on a limb.

A draft standard published by the Auditing Practices Committee will outlaw many of the financial packages sold for small computers.

APC represents the accountancy bodies entrusted to carry out independent audits on the accounts of companies and organisations, and includes the Chartered Accountants' Institutes in England and Wales, in Scotland and in Ireland, and the Association of Certified Accountants.

Early this month, APC published a discussion paper called an Exposure Draft, which aims to provide a standardised approach for computer auditing.

Referring to small computers the document states: "There may

be greater emphasis on substantive testing and analytical review which may be facilitated by certain computer-aided audit techniques; this arises due to weak internal controls, because small computers may either be used in small enterprises or may be dispersed throughout large enterprises.

"Many audit software packages programs will not operate on small computers, and the smaller volumes processed by small computers may render manual methods more cost effective."

The upshot of this is that smaller audit firms which are being increasingly exposed to computerisation by their clients, will now be faced with an auditing guideline which they may find difficult to implement.

But according to Ken Shoult, computer services manager at Casson Beckman Associates, such a

standard is absolutely necessary. CBA is the consulting arm of Casson Beckman, a medium-sized accountancy firm.

"The Mickey Mouse packages on micros and minicomputers will be forced out of business. Packages will have to provide proper audit trails and controls," Shoult says.

He contends that APC is indirectly setting standards for vendors of software packages as they will have to comply with the standards.

"Many small companies buy packages without consulting their auditors first, and up till now, auditors have not had to know anything about packages. What it means is that companies which have not yet computerised will now have to computerise the right way," he said.

Wang users get DBMS elsewhere

by Maggie McLening
QUEUES of Wang users, left without a database management system for the company's virtual storage machines, are being offered products from independent software houses.

Wang recently acknowledged the shortcomings of its software by turning to companies like The Office Manager and Cincom for help. Cincom is to supply Total database systems, while TOM has announced Speed TM II for file management and application design.

Many users were left high and dry when Wang withdrew its own data management system, ADMS, in September last year very shortly after the launch of its virtual storage VS range.

Plans to replace it with a further in-house database system, which as late as last month Frederick Wang, senior vice-president, insisted was still under development, seem to have been quietly shelved.

As a result, there is a queue of 22 users waiting for the release of Speed TM II, says TOM. It offers file management facilities as well as application design and installation control, according to Naomi Langford-Wood, joint managing director of PMH, a software supplier for Wang systems which sells TOM products in the UK.

Speed II is an enhanced version of the Speed TM utility created by TOM for the Wang 2200 series of small business computers, and is installed at over 2,500 sites worldwide.

Wang's equivalent is called Ideas, and is similar to Speed in that both aim to speed up implementation by getting a business function working without standard programming. But there are no plans to adapt Ideas for VS hardware.

"VS is a larger, more sophisticated environment, and anyway there are a number of VS utilities which allow you to do the same things, so there is not the same need," explained Steve Trigg, Wang (UK)'s 2200 marketing manager.

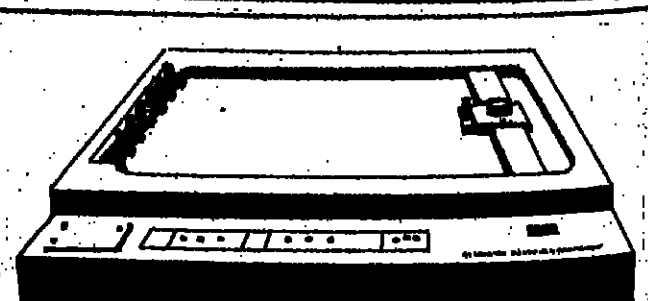
Speed II is compatible with all Wang-supplied programs and utilities, and can be completely integrated with external code in a Wang-supported language.

The Application Design subsystem of Speed II allows development of a data dictionary containing all attributes of the and fields as well as user and technical documentation.

"It's very user-friendly, which is good because you don't have to have quite so many technical people around," commented Langford-Wood, who expects to be offering Speed II to users from April 1.

Wang (UK) has also announced enhancements to the entry-level systems of its Office Information Systems series of word processing workstations.

The OIS 105-1, offering increased storage, the new DW-20 daisywheel printer and a 3K workstation will be available in March, and two further models have been announced for release in July.



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NEWS BRIEF

Mercury goes ahead

THE Mercury alternative telecommunications network is going ahead, Industry Secretary Patrick Jenkin announced in the Commons this week that a licence has been issued to the consortium of Cable & Wireless, Barclays Bank and BP.

Agreement has been reached that Mercury will interconnect with the British Telecom UK public network and will also have access to international circuits, although BT will remain the sole international carrier.

Buzby bond delay

AN announcement on the "Buzby bond" that is expected to allow British Telecom to raise £150 million on the open market is still some way off, according to the Department of Industry. This is despite recent optimistic reports.

Civil Service deal

LONG-STANDING negotiations about the introduction of new technology in the Civil Service at last look like reaching agreement.

Union negotiators have agreed with Cabinet representatives about a two-year agreement which must be ratified by the House of Commons.



NIXON... 1401 memories.

IBM memories

NOSTALGIA mixed with less than reverent mentions of the IBM 1401 and other ancient beasts were the tenor of the evening when IBM managing director Eddie Nixon attended the IBM Users' Association dinner last week. Nixon recalled that when Len Griffiths was the first chairman of the CUA, he was writing his first sales brief for the 1401 - which he then produced to the delight of those present.

Star athletes

SOME of the big names from previous Computastars events have already entered this year's competition. The change in the rules allowing firms to put up more than one team seems to have met with approval, with multiple winners from BT Systems, Case, and Kajimago. Details and application form on page 4.

UK fifth generation cash in doubt

by Boris Sedacca
THE government is to pull together the UK computer industry to a conference in the summer to attempt to agree Britain's response to Japan's fifth generation computer project.

The conference will follow an earlier one at the end of January when the Department of Industry invited the Science and Engineering Research Council to consider plans for a collaborative UK effort for fifth generation computers.

But spokesmen for the DoI this week described as "incorrect" reports that the government had plans to spend £250 million on the development of these machines.

INSIDE THIS WEEK'S ISSUE

Cost 18% pay rise anger unions 3
Companies join 256K-bit race 8
Japan chip battle heats up 15
Clearing case for VDU worker-control 19
Software Month focuses on productivity 22/25

Computer Weekly

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IBM users gang up over 3081 'shortfall'

by Kevan Pearson
USERS of top of the range computers from IBM and its plug compatible rivals are complaining of poor performance from these large systems.

At least five buyers of IBM's 3081 model D, the first of its H-series, are up in arms over shortfalls in performance. The five are Grundig, Volkswagen, Messerschmidt, Hoechst and BMW. They have formed a 3081 club to pressure IBM into increasing their system throughput.

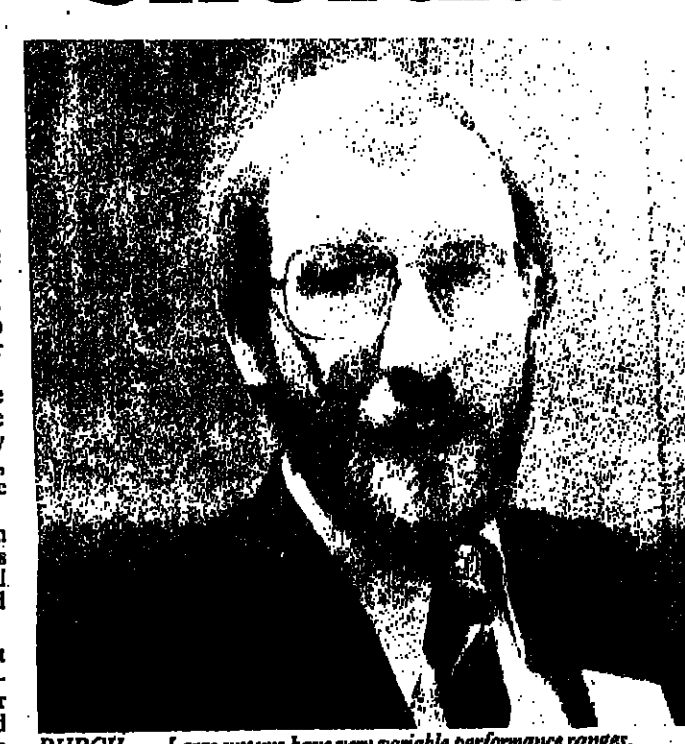
The problems arise when there is a heavy interactive load on the machine, particularly with a heavy use of Time Sharing Option, TSO, the database system, IMS, and the teleprocessing monitor CICS.

They have been so severe that in some cases users claim the 3081 is only as powerful as the 3033 model. AP, IBM's previous top-end machine.

The main complaints are that the machine does not have sufficient input/output capabilities for the speed of the processor, and that the design of the 3081, as a dyadic or close-coupled dual processor, means that only one of the processors is linked to the input/output system for existing installations.

This effectively means that for an application with a heavy input/output component the machine is working well below its potential.

IBM Germany admits that the 3081D may not come up to expectations in individual cases. Unless the whole computer installation is designed to make use of the processor's performance, with 24 channels and high speed peripherals, then the system's performance will not come up to scratch, it adds. The company has yet to make appropriate peripherals like the 3380 disc drive available.



BURCH... Large systems have very variable performance ranges.

Standard Life Assurance of Edinburgh, one of only four 3081D users in the UK, reports similar experiences to the German companies. "The processor is faster than we had been led to believe," says Douglas Manson, assistant head of systems at Standard Life, "but the system doesn't respond as well as we expected."

Tandy was in trouble because prices for the TRS-80 Model III were shown as £499 or £599, depending on which Sunday colour supplement you read. Timing of the price rise did not fit the two printing schedules equally well.

● Turn to page 5.

'82. A great year for PT7.
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COMMODORE PET Quite simply, Britain's biggest selling microcomputer

Commodore's confusing claim.

Top micro firms rapped by advt standards authority

by Robert Parry
ADVERTISING of microcomputers has attracted a rash of complaints to the Advertising Standards Authority from unhappy buyers.

The Authority's summary of complaints dealt with during December shows three of the top-selling microcomputer companies - Commodore, Sinclair and Tandy - had complaints against them.

As well as the recurrent theme of equipment not being available as advertised because of production delays - in December it was the Sinclair ZX printer, the previous month the Commodore Vic-20 - there were claims that adverts were misleading about price, popularity and performance.

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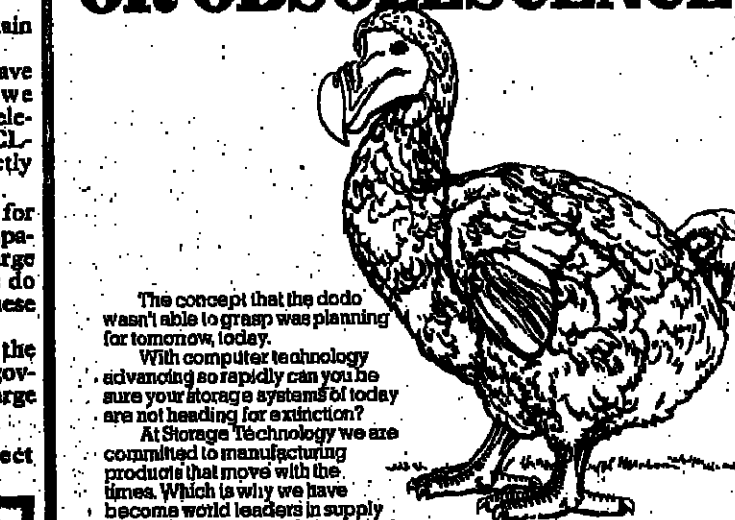
The ASA upheld the complaint, and asked that future advertisements be amended.

Sinclair suffered a flurry of complaints. As well as the non-available printer and its usual few problems with faulty goods or non-delivery by mail order, there was an objection that the Press advertisement was misleading about the ZX 81's colour capabilities.

The copy showed a TV screen with black lettering on a blue screen. The complainant had expected to be able to play colour games, but when the machine arrived found it only had a black and white display.

The ASA upheld the complaint, and asked that future advertisements be amended.

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CIS Cobol and CP/M linked in high level deal

by Philip Hunter
USERS of microcomputers can now buy high level languages and the popular CP/M operating system in one package. This follows the recent acquisition of several high level language compilers by CP/M authors Digital Research, and a deal made with Micro Focus to sell CIS Cobol.

The agreement will also open-up markets for Micro Focus and should bring its CIS Cobol, the first full implementation of Cobol on microcomputers, on to IBM's Personal Computer and Display Writer.

At the same time it will enable Digital Research to offer a complete range of commercial languages as window dressing for CP/M. Recently it took over two companies specialising in languages and compilers in order to bring Basic and Pascal under its umbrella.

Digital Research will be acting as a second source, selling the two Cobol compilers under the same standard terms as Micro Focus itself.



REYNOLDS... free to concentrate on other strategic targets like Unix.

Brian Reynolds, chairman of Micro Focus, believes the pioneering deal will free his marketing team from the burden of selling to CP/M users and enable it to concentrate on other strategic targets like Unix.

But the deal only covers the two basic compilers and omits higher level Micro Focus tools such as Forms II and the recently announced interactive programming aids Animator and Slide Show.

"We will continue to deal with these areas ourselves," says Reynolds.

Micro Focus has two Cobol compilers for micros. The first was CIS Cobol, which brought the first ANSI 74 standard version of the

commercial language on to 48K micros.

The second, announced last autumn, was Level II Cobol, for the emerging generation of 96K microcomputers.

Level II will be tested for the high level certificate later this year by GSA, the US General Services Administration. This would establish full compatibility with main-frame ANSI 74 Cobol compilers.

The deal with Micro Focus gives Digital Research incentive to expand its market. "We get the bulk of the revenue until a certain level is reached, after which Digital Research gets most," says Reynolds. "Eventually we would each take an equal cut."

Digital Research will offer full software support for the product compilers and, Reynolds claims, will be in a better position than Micro Focus to take advantage of improvements in CP/M.



MENZIES, MCKASKILL AND MCKASKILL... orders worth a possible £125,000 from New Zealand.

Export 'novice' expects £125,000 software sales

by Kevin Cahill
LESS than four months after entering the export market, Northampton-based software house Pioneer Computers has clinched orders worth a possible £125,000 in New Zealand.

The orders are for the company's sophisticated DEC-oriented Command software. It will run on the network of 20 DEC PDP 11/70 minicomputers at CBL Ltd, which is New Zealand's biggest bureau.

The orders follow an initial foray to New Zealand made by the

directors of Pioneer last October. Orders of £25,000 are firm now, and £100,000 will follow next year.

On that first trip Ann and Tom McKaskill, who founded Pioneer two years ago with Graham Menzies, signed a consultancy contract with one company and a royalty agreement with CBL to run the manufacturing and accounting package as a service to its online customer base of over 300 companies.

The first customer went live on the package recently.

Former employee scoops Burroughs

by Maggie McLening
A FORMER Burroughs employee is preparing to scoop the market for an online development system from under the manufacturer's nose.

The employee, David Wild, left Burroughs over five years ago but has now brought out a system for series 1900 machines from his company, Hampshire-based Data Management Systems.

His product, Data Processing System, is an online development tool which allows transaction processing systems to be built up in a fraction of the time taken by conventional programming.

Two years ago Burroughs said it had a similar tool, but the product has still to appear.

Wild started developing DPS two and a half years ago, but could arouse no interest from Burroughs itself in the project.

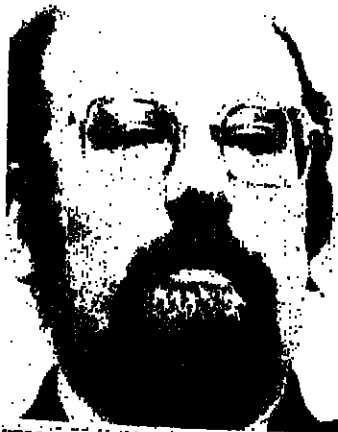
"I first presented DPS in Lucerne in October 1980, where Ken Stokes, who was in charge of Burroughs software development, saw it. He said they wouldn't be interested because they were releasing something of their own in two months' time," explained Wild.

"I believe their own product was going to be generative, but so far nothing's appeared."

He has investigated the possibility of transferring the system to other equipment, but says that there could be difficulties without the sort of inter-program communication provided by MCP, the Burroughs operating system.

A key feature of DPS is the ability to alter field descriptions without re-compiling programs, and to change them immediately on the screen.

A spokesman for Burroughs commented that it expects to have a "sort of similar" product available fairly soon.



WILD... in first with online development tool.

Govt is pressed on privacy timetable

by our Parliamentary Correspondent

OFFICIAL confirmation that the Home Secretary will come to the idea of setting up an independent registrar with a small staff, to provide better data protection, given in a written answer to a last week.

Timothy Raison, Minister of State at the Home Office, was writing Michael Meacher (Liberal Oldham West) who wanted to know the government's policy towards the establishment of an independent registrar or "Comptroller Ombudsman" for data protection.

Raison said government proposals for legislation would be contained in a White Paper to be published shortly.

The Home Secretary, in a further answer, said the best government proposals would be to set up a data protection authority on the lines recommended by the Lindop Committee.

Some 40 MPs have already sought to underline the Minister's condemnation of the invasion of privacy of individuals through unauthorised access to computer data held by both public and private agencies.

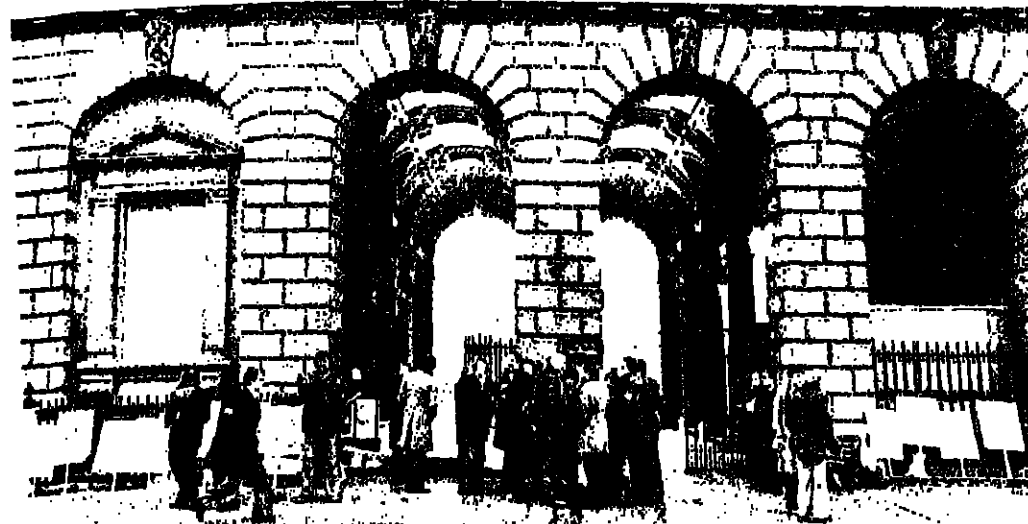
In an attempt to hold the government to its word, the Minister introduced legislation in the House of Commons to introduce a Private Members' Bill, which he tabled in the Commons.

The motion is in the name of Michael Meacher, who is trying to legislate on the matter through a Private Member's Bill. It is being backed by MPs from both sides of the Commons.

A Cabinet Minister for science and technology has been called in to a debate in the House of Lords. Lord Sheffield made the point drawing attention to a report by the Lords Select Committee on Science and Technology on the relationship between science and government.

The Prime Minister has assumed responsibility for co-ordinating scientific policy but it is argued in the debate that a separate Minister should be appointed who would be able to spend more time on the subject.

During the debate, Lord Flowers expressed hope that the Minister for Information Technology would announce meaningful national policy on information technology's application would affect nearly every activity and profession.



Computer staff in the front line of last year's protracted government pay dispute.

Govt 18% pay rise plans anger unions

by Andrew Thomas
GOVERNMENT plans to pay its computer staff rises of up to 18% this year while other workers are limited to a maximum of 5 1/2%, have been criticised as divisive and badly thought-out by Civil Service unions.

At least 65,000 other civil servants, who are under 21 or at the bottom of their grades, will not be offered any rise this April, and other grades are due to get increases of between only 1% and 5 1/2%.

But government DP staff, who were in the front line during last year's five months of selective strikes, are to get up to 11% over and above the government's 5 1/2% maximum offer to other sectors.

The extra allowances are available, at management discretion, to provide rewards for individual skill and productivity. The staff involved are Executive Officers (EOs), which include operators and programmers, and Higher Executive Officers (HEOs), the grade including systems analysts.

In addition to the new allowances, the earnings limit on grades for HEOs has been withdrawn, enabling those at the top of the salary scale to receive more money, when previously the only route to higher pay was promotion.

The reason given by the Treasury for the seemingly preferential treatment for DP staff is the retention of skilled personnel.

"It is very difficult to replace skilled DP staff," said a spokesman, "and even in these troubled times, they are still very mobile. The extra allowances are

Bank may switch to micros

by David Craver

THE UK's largest merchant bank has started a programme which could lead to the replacement of its Digital Equipment PDP 11-based installation with a network of Zilog microcomputer systems.

Kleinwort Benson took delivery of two 16-bit Z8000 systems at the end of last year - believed to be two of the first in the country - and has undertaken evaluation work with a view to buying more. It is expected to take some 30 systems and link them in a network which will eventually replace the PDP 11s.

Initially the Z8000s will be integrated into the existing DEC systems, which include five PDP 11/70s in place and two on order, and a PDP 11/55. They will be used for software research and development, and as printing subsystems and file devices.

Applications for the Kleinwort Benson computers, which are installed in the City and a new site in Newbury, are the entire books of the bank, a real time foreign exchange system, and an investment management system.

Ethernet-based local networks soon to be made in the UK

by Donald Kennett

LOCAL networks based on the US-designed Ethernet system will soon be made in the UK, but paradoxically, the manufacturer expects to find some of its first customers in the US market.

Northwich-based data communications manufacturer Sension Scientific, the first UK company to design and build Ethernet-based networks, this month goes into commercial production of its Ethernet-compatible transceiver and V24 serial device interfaces after running trials with an unnamed UK system builder since last October.

Its network will also be built into systems by its own sister companies Sension Systems (for the industrial market) and Turnkey Systems.

Six UK companies have so far signed orders for systems, but the interest from the US stems from the fact that Sension's version is designed for the industrial environment and has a high electrical isolation (4KV) and low capacitance between the cable and the transceiver.

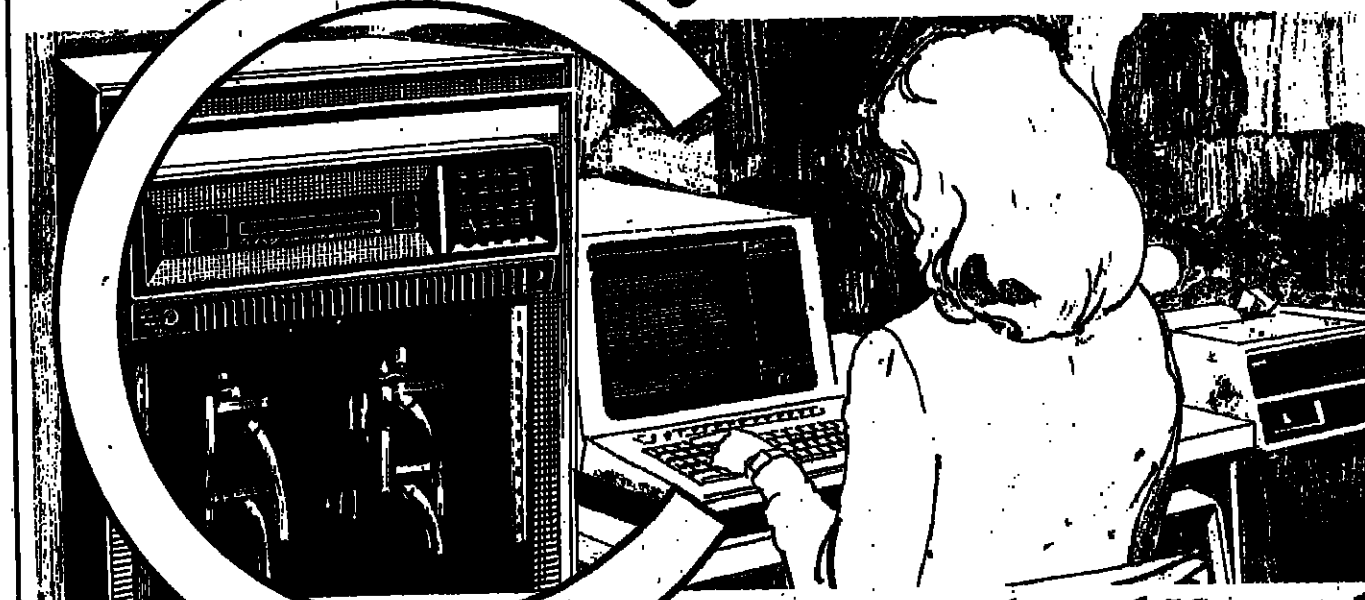
Sension group managing director Roger Dyke said many of the company's UK customers used the British-designed Cambridge Ring for local networking, but he felt that Ethernet would be more widely applicable to multinational networks.

One of the potential US customers already has a US-made Ethernet installed and is having problems with it because of the environment in which it is operating. Another company is considering distributing the UK-made version in the US. The recession is making US manufacturers look outside for system components to save on their own development effort, according to Dyke.

The company is offering Ethernet trial kits containing three transceivers with coaxial cable and connectors. The transceivers cost £359 each, but fall to £188 each when 100 are ordered. V24 interfaces cost £795 for the single-port version and £985 for the four-port model.

Dyke thinks the Ethernet systems will account for a significant proportion of this year's expected £2 million turnover.

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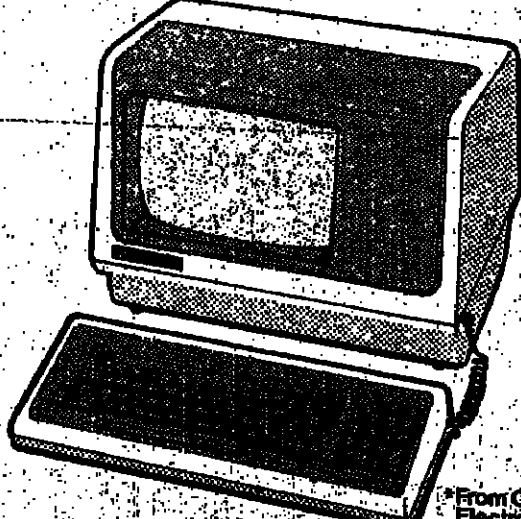
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| Sub-editor | 01-661 2211 | Sales Executive | | | | | |

'Speed of mini, price of micro'

by Robert Parry
MULTI-USER systems with the speed of a mini but the price per user of a micro is the promise held out by Multicomputer with its M200 systems.

Based on US hardware from Molecular Logic, M200 gives each user a separate 280 CPU with 64K RAM and access to shared disc files and peripherals, and a remote terminal.

By putting all the process boards in one central unit, connected by a high-speed parallel internal bus, Multicomputer claims to provide "speed where it counts" — cheaper than a minicomputer and faster than a local area network linking individual microcomputers.

Up to 255 users can share hard disc storage which can be expanded to 600 Mbytes. The system runs under a CPM-based operating system, nSTAR. It will run standard CPM application programs, but is enhanced to give multi-user programming and give better data security.

Links to mainframes are not currently possible, but managing director Arthur Kennedy thought that the capability would be available in three to four months.

Brentford-based Multicomputer will sell only direct to users in partnership with people proficient in particular application software. This could involve supplying hardware and operating system software to system builders or



KENNEDY... Links to mainframes in 3-4 months.

supplying turnkey systems to end users with application software written by experts.

Multicomputer's first link is with a group general practice in the Deddington Health Centre, Oxford. Software aimed at primary health care has been written by one of the doctors, Peter Fell, a neighbour of Kennedy.

No customers are lined up for such systems yet, but Multicomputer hopes for a share of the large potential market. Benefits of the

system to large group practices, which can stretch to 30 doctors and 75,000 patients according to Kennedy, include enabling the doctors to practice preventative medicine as well as curative. It would be possible to search for particular drug combinations or sets of symptoms, impossible with manual systems.

Kennedy added that if the GP systems went well, Multicomputer would think seriously of developing hospital medical systems.

Call for £175,000 to develop DP training

by David Craver

THE voluntary computer services industry training board, Cosit, is seeking some £175,000 from the Manpower Services Commission this year to develop industry training of DP staff. That figure is less than one per cent of what the UK computer industry is estimated to spend on training annually.

Cosit, formed last October, hopes to provide a more flexible approach to training, and so turn the MSC away from the typical two-year TOPS-oriented programmes. Its role will be as a kind of broker for industry-run training courses, tapping the strengths of the major computer companies which have set up their own successful training schemes.

The MSC is expected to look favourably on the board's "supplimentary continuing assistance".

The progress of Cosit will be under the eye of the Engineering Industry Training Board, which may find its future as the traditional centre of computer industry training brought into question.

When Tetbit axed 16 mandatory industry training boards at the end of last year the EITB was spared, but that was probably because it was too large and entrenched to get rid of.

The MSC, which has been allocated £1 billion under the government's New Training Initiative, will decide by the end of next month where training funds will go. While Cosit has put a five-year programme to the MSC for consideration, Ewan is of the opinion that the MSC will opt for short-term funding.

The recent appointment of David Young as chairman of the MSC to replace Sir Richard O'Brien encourages that view, and Ewan suggests the MSC is starting from scratch with the new appointment.

Ewan hopes Cosit will become the No 1 trainer in the computer industry, which could eventually expand its current mandate which is now solely in computer services. He says his job is to convince companies to take people on and train them from apprentice level, as well as to provide some standardisation of training.

Apprenticeships, Ewan says, are out of fashion, and this was one of the reasons for setting up industry training boards in the Sixties. But some sort of formal "traineeship" is needed, he asserts.

as Cosit training executive Gordon Ewan puts it, especially as Employment Secretary Norman Tebbit has made clear his preference for voluntary arrangements.

Tebbit has agreed to be the keynote speaker at a Cosit seminar on March 10 which, Ewan says, will put the message to industry executives that "unless you are prepared to train you are going to get caught."

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EWAN... "Unless you are prepared to train you are going to get caught."

SALES BRIEF

Solartron system for power station

THE Solartron Industrial Systems division of Schlumberger has a £400,000 contract from the Central Electricity Generating Board for a plant supervision system for Eggborough power station, Humberside.

The system will be based on 512 Kbyte Digital Equipment PDP-11/24s running software developed on a DEC LSI-11/23 and the CEGB, using its own programming language Outlast. Completion is due by the end of 1984.

Police links

THE Home Office has ordered a number of computer-based communications systems from Burndep Cyfas Systems of Gleswade for use by the police.

They include a Comsat II, a Mini-Consort II and a Mini-Consort II divisional work control systems and a radio location system for nearly 50 vehicles.

Healthy interest

ORDERS from health authorities for Stage One Computer's EN transactional database program Administrator now total £20,000. The company has also signed distribution agreements in the US with Professional Software, which markets the Wordpro word processing package, and with Telelex of Johannesburg. The US market is expected to take 6,000 packages a year.

£100,000 order

BELFAST estate agent his Morton and Company has landed a word processing, data processing and information retrieval system based on a Wang 2200 MVP. Supplied by Wang's Northern Ireland distributor Logicon, the system has six VDUs and, with application development work, cost over £100,000.

Voice links

CENTRE-file, the bureau subsidiary of NatWest Bank, has installed a voice response system from Menzies Communications Systems, taking advantage of MCS' scheme for bureau customers which links payments to use. The system is being used by X-Shoes to collect data from 325 shoe shops.

Consortium

THE Trowbridge-based Consortium for Purchasing and Distribution has ordered a £50,000 Realtime for Purchasing and Distribution system from a fusion compact office system to take over stock management and order processing work from existing data input equipment. It will be linked to an IBM 3031 mainframe at Wiltshire County Council offices.

Society system

SCARBOROUGH Building Society is to install an in-house "borrowers' and investors' control counting and document control system. Based on Computer Cardiff-based Target Computer Services, it runs on a Univac System 80. The system is written in RPG II and it will support inputs and inquiries from five workstations in two of the society's offices.

Holiday micro

BIRMINGHAM-based villa holiday operator European Holidays has installed a Micro Space accounting and reservation system from Micro Scope. The system is based on a Telem 1000 microcomputer with two terminals and it will help to handle the expected 10% increase on last year's 6,000 bookings.

ADP, Aregon team up on viewdata range

by Donald Kennett

COMPANIES wanting to extend their computing facilities to a much wider range of users could benefit from a new range of viewdata services being marketed through ADP Network Services and Aregon International.

The services will be marketed under the name ADP/Aregon, initially in the UK and in other countries later this year. The range includes network and bureau facilities, turnkey systems based on Digital Equipment PDP-11/23 and PDP-11/44 minis, viewdata software for existing installations, and gateways to give access to any other computer or network.

The functions supported include high-resolution graphics for diagrams and digitised photographs. These are accessed through the £1,000 AGP audio graphics processor, which was developed by Aregon with the Open University as the Cyclops terminal.

Mailbox facilities and access to

data processing services are also supported, as well as the standard information retrieval and data collection functions, using standard viewdata terminals.

Aregon International's managing director Anthony Chandor said the viewdata services were expected to generate £500,000 worth of business in the first year. "We are now showing people they can save money with a videotex (viewdata) system."

Chandor added, "It seemed to us that the next stage forward would happen by allowing them to access bureau services and rent their own on-site services on an annual basis."

ADP managing director Brian Titherthorpe said the ADP/Aregon services combined hardware, software, maintenance and consultancy with access to both national and international communications networks.

ADP is the European subsidiary of Automatic Data Processing in the US. Its network provides local

Re-launch by private viewdata pioneer

by Donald Kennett

ONE of the first companies to put a private viewdata system on the market in the early days of Prestel has re-packaged and re-launched its system.

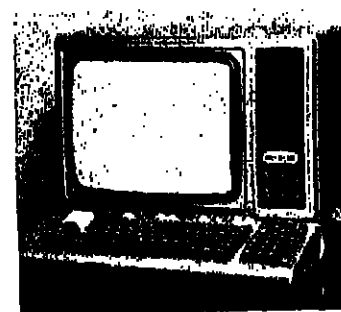
Twyford-based software consultancy and systems house D. M. England has sold only 15 of its editing terminals and one copy of the viewdata system software package it developed in 1978 to run on the Digital Equipment PDP-11 range. But it has continued to refine the system, now called Miracle Viewdata, and is gearing up to meet what it sees as a renewed interest in viewdata, particularly in private viewdata.

Marketing manager Alan Howard said: "We don't see ourselves as being in large quantity terminal manufacture, but we can be quite strong in editing systems because we start at a modest level."

He thinks the system will account for no more than 10% of this year's expected £1 million turnover.

The company has set up batch production of the system at its assembly plant near Taunton and has one salesman out of a staff of 35 promoting it full-time. It makes its own editing terminals using an Intel 8085-based control unit and keyboard of its own design, with a modified Ferguson Movie Star colour television as a display.

For the central database, it builds multi-vendor Winchester



Miracle Viewdata.

disc-based systems around the Digital Equipment LSI-11/23, which it buys in as a printed circuit board, or runs its software on to standard Digital Equipment systems to handle larger capacities. The LSI-11/23-based version would be expected to handle up to 48 terminals at once, probably six of them being editing terminals.

Enhancements to the editing software on the new version include commands which enable blocks of text and graphics to be moved around the screen and colours to be changed in blocks instead of row-by-row. A single key-depression displays all the control characters that are in use.

The price of the editing terminal is £950. Software for the central system costs £3,800 including a gateway facility for linking to other computers. The editing and bulk update modules are £1,990 and £990 extra respectively.

Mid-range Series 1

by Kevin Pearson
A MID-RANGE version of its Series 1 minicomputer has been launched by IBM.

The new model, designated the 4954, fits between the existing Series 1 processors and is priced at £5,343 for the standard 64-Kbyte version.

Maximum memory is 256 Kbytes, which places the machine mid-way between the 128-Kbyte maximum of the smaller 4952 and the 512-Kbyte memory of the top-of-the-range 4955.

The new machine is available with the same eight software address spaces as the 4955 for multi-programming.

The processor is manufactured in Italy and scheduled for delivery in May 1982.

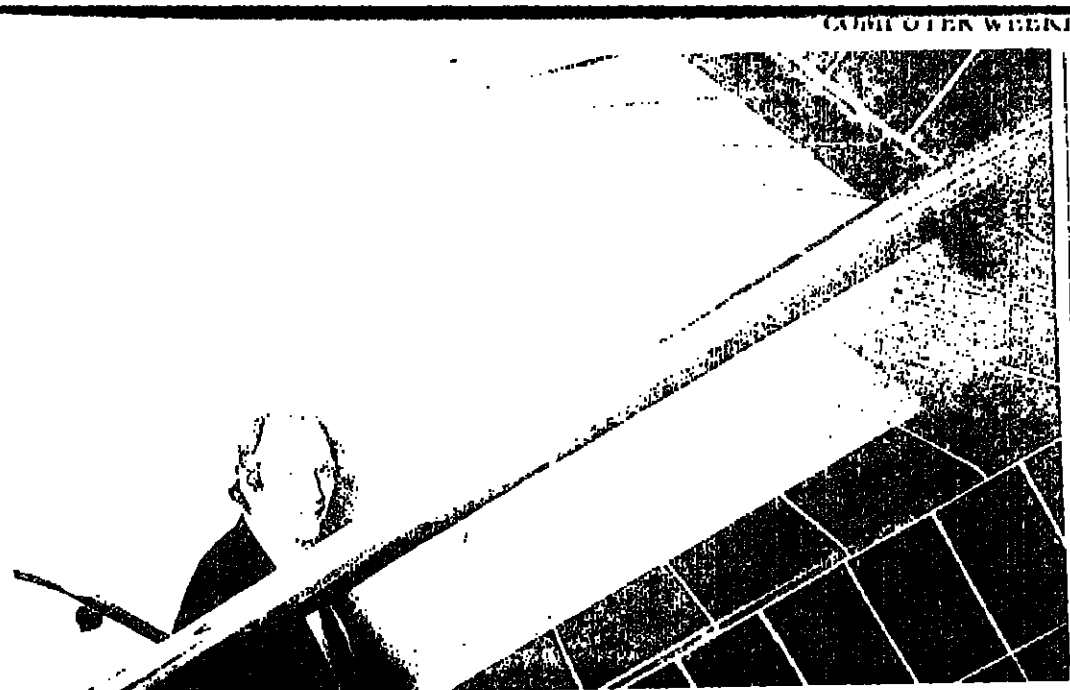
Talking terminal

by Kevin Pearson
BLIND or partially sighted computer users have been given a boost by the launch of IBM's audio option for its 3278 terminal.

The Audio Output Feature produces electronically synthesised speech from the information which is displayed on the screen.

The talking version of the 3278 has an additional 16-key keypad and three extra controls; otherwise it looks like a normal 3278 and can be used as such by normally sighted people.

At £3,300 the unit is three times the price of a standard 3278, and the audio option is not available as an add-on feature for existing terminals. There are thought to be about 200 potential users in the UK.



CHANDOR... People can save money with viewdata.

call access in 30 locations in the UK out of a total of 100 worldwide. The viewdata package will be marketed in a number of other countries, probably including Holland, West Germany and Italy this year.

One US client is evaluating the viewdata software for a specific application, although ADP has yet to decide to market it actively there. France is expected to be a big market for private viewdata, but ADP

may tackle it with a local solution if it finds there is too much hostility to a British product.

Using the ADP/Aregon service would cost £3,000 a year for 500 pages and 50 hours a month access time on the bureau machine, or from £20,000 a year for a system on the customer's site. The latter would be based on a PDP-11/23 with eight access ports and Winchester disc storage with tape streamer back-up.

The AGP high-resolution graphics terminal is expected to appeal to a very small proportion of users, but is felt to be an essential answer to competition from Canadian-built viewdata systems which feature more sophisticated graphics than the current version of Prestel.

The terminals are currently being made for Aregon in batches of 25 and Chandor said the price would drop from £1,000 to £700 each for anyone who ordered 50.

3081 users gang up

● From front page

and to terminals as quickly as we expected."

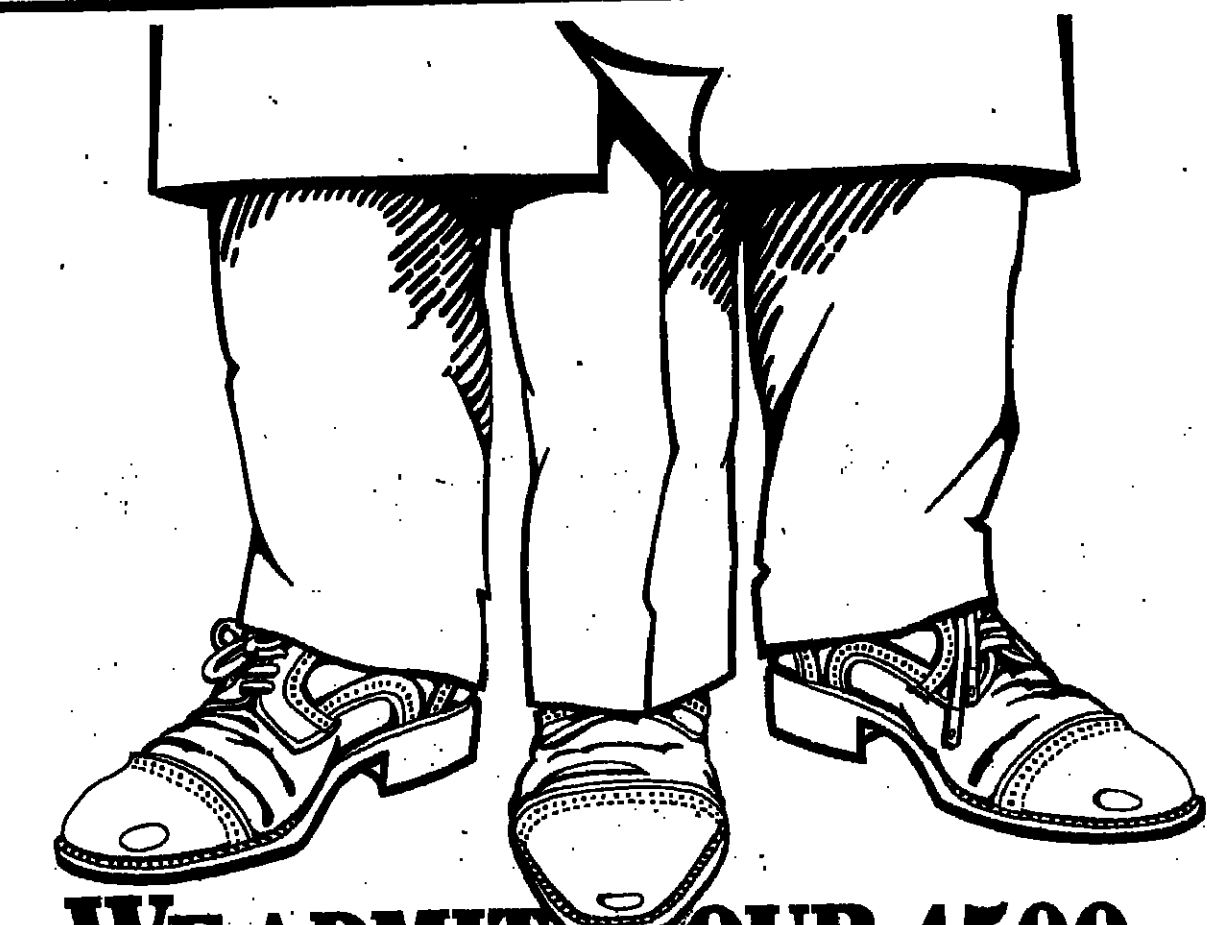
Pat Sullivan, vice-president of US consultants ACT, and an expert on IBM's big systems, confirmed Standard Life's experience. He said that tests in the US had shown that the 3081 processor was faster than IBM has claimed, but that where the input/output load is high there could be performance shortfalls.

IBM is not alone with the problems. They have also affected National Advanced Systems' Japanese-built AS9000, which has a similar power rating to the 3081D.

"Large processors today have very variable performance ranges," says Brian Burch, director of large systems at NAS, "and it is not possible to predict where in that particular range a particular workload will drop."

"You cannot construct realistic benchmarks for the production environment of a large scale system because you cannot simulate 1,000 terminals."

"The variable power rating is due to a bottleneck in the system's architecture," added Burch. He believes it will be cured when Extended Architecture MVS/XA becomes available.



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Wizard system for finance models

by Maggie McLening

HEDGING its bets in the financial modelling market, time sharing bureau Comshare has launched a product for mainframe users. Called Wizard, the new system is to be available as a bureau facility, in contrast to Fastplan, a modelling system which Comshare recently launched for clients to run on their own in-house micros.

"We decided to separate and go up and down market," explained Nigel Pendse, financial products marketing manager.

Wizard is designed for multi-dimensional business modelling and can handle over 2,000 variables, which is equivalent to 2,500 master lines in Flamaster or over 5,000 rows in FCS, two other widely used financial modelling packages, according to Comshare.

Pendse describes Wizard as an "intelligent database, a hypercube for multi-structural modelling."

"The user can slip in anywhere and state formulae for calculations, and the system spreads them top-down globally," Pendse added.

A microcomputer version will be available at the end of May, but will not be sold as a standalone system through dealers.

"It will be sold more in the context of the Wizard system, for people who also have the mainframe version, and would therefore not be competitive in a simplistic market," explained Glyn Read, strategic planning director of Comshare.

Comshare expects sales of £1 million from Wizard in the UK in the first year.

Entries roll in for DP Olympics

ENTRIES for this year's Computastars are coming in thick and fast. Last season's champions, BL, are fielding five teams, and Case, who took the individual gold medal in the first two years of the competition, are back with a vengeance — four teams will compete this year.

The defeated finalists in the 1981 Computastars, the Worthing Rams (otherwise known as the Inland Revenue), are back, as are last year's European winners, Kalamazoo, with three teams.

Legal and General has entered again, but without last year's ladies champion, Bridget Cuthill who is leaving to get married. Whether this will affect Legal's "invincibility" remains to be seen.

Entries can be in any one of four categories: Men's or women's teams in the main competition and Computastars, the Small Units section, which is restricted to companies employing fewer than 25 staff in a 25-mile radius of the location of the team's entries, and Veterans, which is limited to members who are 35 years old or over on February 1, 1982.

Full details of the rules and regulations can be found in the February 11 issue of Computer Weekly, and all entries must be in by March 19.

COMPUTASTARS ENTRY FORM

We have read and accept the conditions of entry for the Computastars/Computastug 1982 and would like to enter

Main competition Men's teams Women's teams
Small units Men's teams Women's teams
Veterans Men's teams Women's teams
Computastug Men's teams Women's teams

Name of team(s) Women's teams

Company

Address

Name of contact

Telephone

Signature of DP manager or equivalent authority Extension

Position held

We would like to compete in the following region:

NORTH (BARNSELEY) MIDLANDS (BIRMINGHAM) SOUTH (CRAWLEY)

please circle appropriate region

Enclosed is £..... to cover the entry fees for the team(s). Cheques should be made payable to Computastars Ltd.

In all matters relating to the rules or conditions of entry, the decision of the organisers is final.

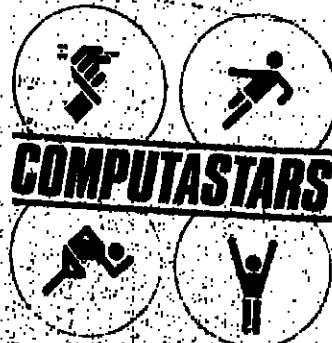
Please send entry form and fees to Computastars, 117b High Street, Groydon CR0 1QG.

Telephone 01-688 6690

Dates and venues: Crawley, Saturday, May 15; Barnfield, Sunday, May 23; Barnsley, Sunday, June 13.

Birmingham, Saturday, June 26; UK Finals: Birmingham, Saturday, July 24.

If you have a query on Computastars please don't contact us at Computer Weekly — get in touch with the organisers at 117b High Street, Groydon CR0 1QG. Tel: 01-688 6690.



Sponsored by Computer Weekly

حکمان الأول

DEC sales shift means more support for small user

by David Craver
WITH Digital Equipment's authorised distributor programme now firmly in place, the first dividends should go to DEC's smaller customers, who can expect better service and support.

The official announcement of the five UK authorised terminal distributors Rapid Recall, Bytech, Zygal, MBS Rentals, and Abacus - was made last week, although their names had been widely known since the beginning of the year.

Thus the final strokes have been put to DEC's strategy to shift most of the low end of its business to distributors. And that strategy is likely to be emulated increasingly by the other major computer

manufacturers, who are finding it more difficult to provide adequate levels of support to customers as the cost of hardware continues to decline.

DEC had been plagued by the collapse of some of its leading OEM systems houses, and there has also been some disarray in the terminal market. The authorised distributor programme is designed to ensure that DEC has more control, while at the same time providing better pre- and post-sale support for users at the local level.

Eight commercial OEMs have been named since the scheme was announced two years ago - ACT, Alveronic, Applied Computer Systems, Arbat, CHA Group, Hoskyns, Management Control



SEAL OF APPROVAL... Representatives from DEC's new terminal distributors Zygal, Bytech, MBS Rentals, Rapid Recall and Abacus.

Systems, and Online Computing of Dublin.

Bill Passmore, UK marketing manager, said that the number of commercial OEMs would increase, but in ones and twos rather than half a dozen at a time. He would like some of the big names, like

CAP, to join the authorised distributor programme, but their reputation is such that they can continue to market DEC kit without DEC's imprimatur.

The number of terminal distributors will probably stay fixed at least until their effectiveness can

be assessed, Passmore adds.

The DEC sales office has changed significantly since the early 1970s, Passmore states, and now concentrates on big systems or high-volume orders to companies like BL, which might take 200 terminals at a time.

Executive terminal plugs into phone system

A PORTABLE terminal for the "executive on the move", which allows remote access to computers for electronic mail, sales data, contract preparation, and medical data, has been released by Digital Equipment.

The hard-copy unit, called the Correspondent, will link into any European public telephone network, and marks DEC's entry into the portable terminal market. Nigel Carruthers, European product manager for terminals, describes it

as being at the "premium end of the market", which is indicative of DEC's general strategy in terminal sales.

Carruthers refers to DEC's popular VT100 video as the "most copied and emulated terminal in its class", and claims that recently added features, which include graphics capability and the option to turn it into a personal computer, will ensure that the series continues to capture a big share of the high quality market.

DEC's terminal division has been outstripping the company's already high growth rates. Across the whole range of videos and printing terminals DEC reckons to have 15% of the market, with that share going up to 20% in the next five years.

With the enhancements to the VT100 the large number of terminal manufacturers who have been emulating the unit may find the carpet pulled out from under

them, particularly given the widespread interest that has been reported for the personal computing upgrade.

The Correspondent incorporates either a direct connection modem or an acoustic coupler, or both, has 132-column printing, and bit-map graphics capabilities. Costing from £1,351, the unit is designed to meet International Air Transport Association regulations for airplane baggage. Deliveries are scheduled for July or August.

Task force to coax UK into cashless society

by David Craver

A CONSORTIUM of UK companies to stimulate the development of personal microchip cards has been drawn together by the British Technology Group. BTG is acting as a catalyst for the work of the task force, which has been set up to counter advances made in the US and France.

Commenting that personal microchip cards are "obviously going to come into mass use," a BTG spokesman said the object is to get British technology knowhow mobilised. Actual development of the cards will be left to individual companies, but BTG would be receptive to applications for funds at that stage.

Membership of the task force, called the Tokens and Transaction Control Consortium, is open to any interested companies, with a token donation necessary to fund the administration of the group.

A first meeting was held a few weeks ago and included British Telecom, Ferranti, Marconi, National Giro, Chubb, Cadre Systems, National Computer Centre, the Post Office, National Economic and Development Office, Pirey Bowes, and the National Physical Laboratory.

NPL brings its expertise in cryptography to the task force. Personal identification is an important aspect of the card, which has a very small microcomputer and memory chip built into it.

The major clearing banks have not yet joined the group, although BTG is anxious to have their participation. "The banks' contribution would be crucial as the task force considers areas of standards, priorities and problems in developing the personal microchip card."

Further evidence that the cashless society is at hand comes from the 12 high street banks. They state that after the first year of a promotional campaign to encourage payment of wages directly to bank accounts, the number paid

on this basis monthly has increased by 600,000 to 5,650,000.

Terry Duffy, president of the Amalgamated Union of Engineering Workers has been exhorting union members to accept monthly payments, and says the union's own employees are being offered an incentive increase in salary of one per cent if they accept non-cash payment of wages.

An interesting aspect of the switch to monthly automated payments is that in many cases employers have passed on savings to employees in one form or another, an example of the benefits of new technology being shared with the workforce.

This has taken the form of a lump sum payment, increased employee discounts in retail operations, and other schemes.

There are now 2,300 cash dispensers in place between the 12 high street banks, and by the end of this year the figure will reach 4,500, a spokesman said.



DUFFY Exhorting union workers to accept non-cash payment of wages.

NEWS BRIEF

100 new jobs in Scotland

US-OWNED electronics and instrumentation company Baker Instruments is increasing its workforce at its Glenrothes facility in Scotland from 300 to 400. Another 30 people are planned to be taken on in May. The expansion is to meet strong demand for the UK-developed resistor networks increasingly used in digital electronic equipment.

Advice offer

AN association has been formed to give independent advice on computers and systems. The Association of Professional Computer Consultants will offer the services of independent people bound by code of conduct, and free of commitment, to any computer supplier. APCC is at 109 Balg Street, London W1M 2BH.

Top jobs decline

DEMAND for people to fill top jobs in computer companies fell sharply in 1981, although there was a national rise in the overall number of executive job advertisements. Computer jobs fell by 10% over 1981, whereas the total number of jobs irrespective of category rose by 22%.

Centre for sale

INTERLINK House, the former Vickers computer centre at Newcastle, is being offered for sale at £330,000. The centre, which closed last November, was an accounting and management base for the Vickers companies on Tyne-side. The installed computers are extra to the asking price.

Bumper plans

SYSTEMS Group, the California-based small business system manufacturer, is planning for a bumper year in 1982 with a growth forecast of 400% over 1981, last's record year.

Training for hire

A NATIONAL scheme for hiring training material will be set up by the National Computing Centre in March. Video tapes and packages such as Basic Computing Concepts will be available on a weekly or monthly basis, and will be on display at the NCC's regional offices.

Sales increase

CALIFORNIA-based software and systems house Informatics recorded a 19% increase in sales of almost \$126 million in 1981. Earnings rose by 25% in the same period.

Name change

SE Labs (EMI), the Middlesex-based computer technology arm of Thorn EMI, has changed its name to Thorn EMI Datatech. The company is a leading UK supplier of modems and data storage equipment.

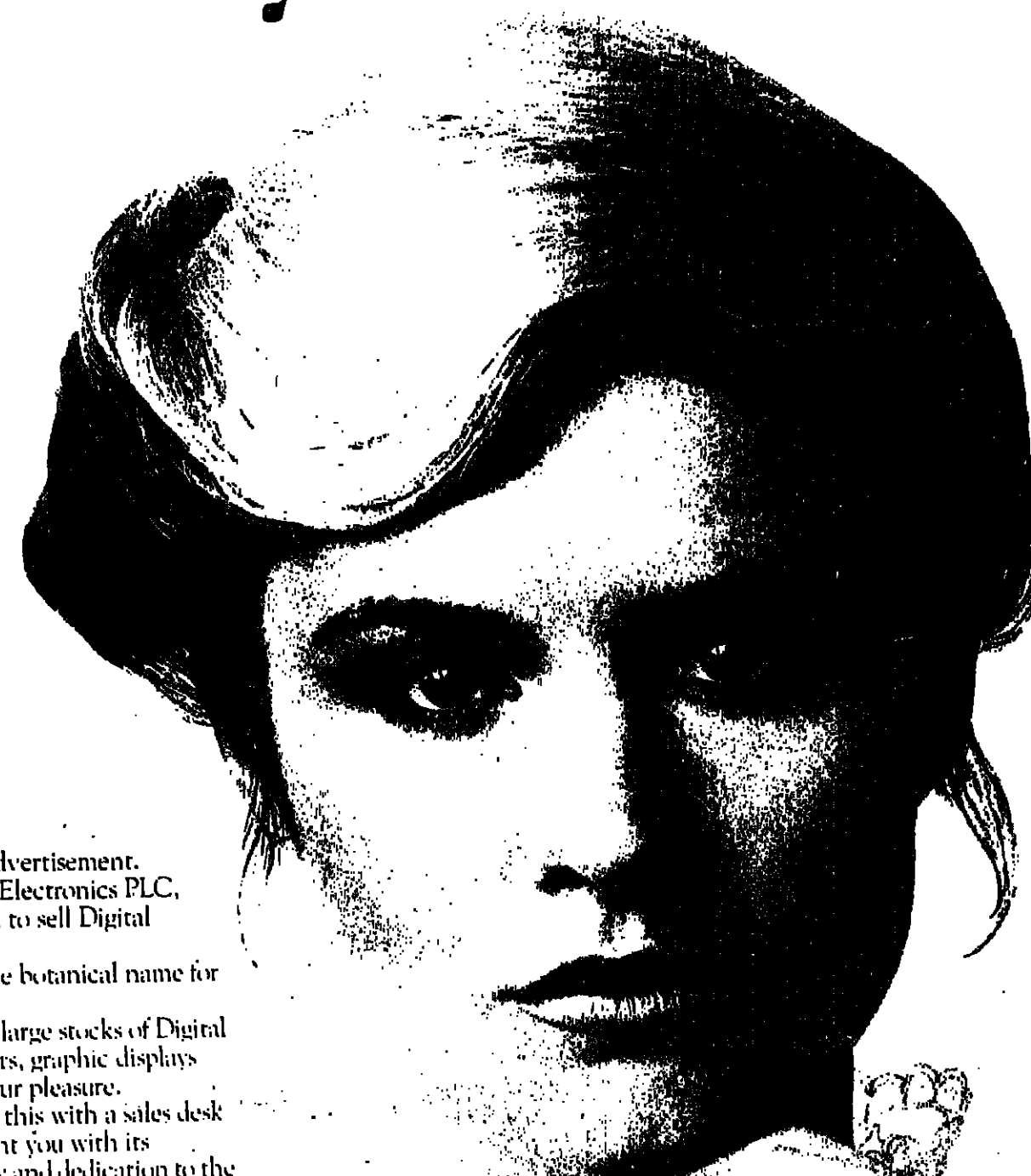
Paper package

A PROCESS control and management information package specifically for the paper making industry has been developed by AccuRay of Columbus, Ohio. Combined with paper machine and pulp mill control systems, the MicroManager 8000 is claimed to provide a fully integrated process control and information network communicating with a wide variety of minis and mainframe computers.

CP/M in colour

AN interactive colour graphics package for microcomputers running under the CP/M operating system has been launched by Lifeboat Associates, a leading software publisher. Costing £255, the Gratic system includes a digitiser option and joystick mode with light pen support.

The Lady Henrietta Foxglove.



This is an advertisement.
For Abacus Electronics PLC,
newly authorised to sell Digital
terminals.

(Digitalis: the botanical name for Foxglove).

Abacus has large stocks of Digital terminals, printers, graphic displays etc., awaiting your pleasure.

We support this with a sales desk which will delight you with its knowledgeability and dedication to the customer.

We also have lots of software advice to give.

So try Abacus, the new authorised terminal distributor for Digital.
You'll come back for more.

Apart from her charming name, Lady Henrietta's other significance is that she is one of a series of elegant illustrations, available in poster form.

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A collectors item, you might say, just like the Abacus service.

Abacus Electronics PLC.

Zygal presents the Digital personal computing option for the VT 100.

Zygal Dynamics, already one of this country's leading suppliers of office computer terminals, now presents possibly the world's most exciting personal computer package - the Digital personal computing option.

The Digital CP/M personal computing option package includes: CPU (Z80), Dual mini floppy drives, Diagnostic disc, User documentation and guide, Installation hardware.

It means that the VT 100, the world's most widely used professional ASCII video terminal, can be turned into your own desktop office computer in minutes. No sacrificing easy-to-read, commercial quality video. And set-up functions you can personalize for yourself right from the keyboard.

Other features include: smooth split screen scrolling, double height-double width characters, reverse video. It also features the decade's fastest-growing family of software - from high-level languages to everyday financial modelling, word processing, mail list, statistical packages and data base communications.

The Digital connection enables Zygal to offer a complete range of products for your every computing need.

Think Zygal for the Digital CP/M VT 100 personal computing option. Or any Digital terminal. Think Zygal for all the leading names - Diablo, Fujitsu, General Electric. Zygal is the last word in new ideas.

Zygal Dynamics plc, Zygal House, Telford Road, Bicester, OXON OX6 0XB. Tel: Bicester (0692) 3361. Telex: 837907.



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Ten companies join the race to produce 256,000-bit chips

COMPETITION is rapidly intensifying in the race to be first into production with the next generation of memory chips, the so-called "super" chips, which will store at least 256,000 bits. About ten contenders are now in the field.

Many of the competing companies chose this month's International Solid State Circuits Conference in San Francisco either to add details to already announced designs, or to outline further developments to existing laboratory products.

The market for the chips is estimated to be worth anything between \$7 billion and \$15 billion by 1985, when they will provide the means to very fast new mainframes. These will include Gene Andriani's Trilogy machine and ICL's Lamps Estrel.

The characteristics of the devices, apart from increased capacity, include increased access time, without which the very high processing speeds predicted for the fifth generation machines will never be achieved.

To attain this very high access time the distance between circuits in the chips must be reduced from current production levels of three or four microns, to about one micron or less.

The key word is production.

Laboratory advances have enabled Fujitsu and Perkin-Elmer to achieve sub-micron circuitry, but translating one-off laboratory production into mass production at these very fine line widths, is not easy.

The most important announcements at ISSCC, therefore, were those which dealt with production, rather than development of the chips.

Although the limelight at the show went to Hewlett-Packard's announcement of its six-chip 32-bit microprocessor, the key 256K generation announcement came from IBM.

Engineers from the company described a seven millimetre square bi-polar silicon chip which can store 288,000 bits of data in 9-bit bytes. The 288K chip is not a standard configuration and does not conform to the general belief that the main memory chip in the next generation will be 256,000 bits.

The engineers who presented the papers detailing the chips both work at IBM's Burlington, Vermont-based semiconductor plant, where IBM claims to be mass-producing 72K chips currently.

This is the biggest chip known to be in mass production anywhere.

The IBM 288K chip is described as "being produced as an experiment from a production line".



LABORATORY PRODUCTION... Mass production becomes increasingly difficult as circuit dimensions reduce.

The access time for the chip is quoted at 350 nanoseconds, and the minimum feature size is 2 microns.

To further emphasize the company's pre-eminence IBM engineers described another non-standard device, this time a gate array chip which is in production at 4,208 gates and includes a 13K memory RAM.

Current gate array chip production is taking place at about 2,000 gates with Fujitsu implementing a 1,300-gate chip in the M380 mainframe which it will market with ICL.

Ferranti is sampling a 10,000-gate chip and LSI Logic in California is scheduling a 10,000-gate NMOS chip for production late next year.

To complete the American picture in the 256K race Bell Labs and Motorola both made announcements at ISSCC.

Bell will begin manufacture later this year on a 2.3 micron width 256K chip which the company expects to have an access time of 105 nanoseconds, the fastest time quoted for any of these chips.

Motorola is planning to show a 100 to 150 nanosecond access time 256K chip at the Wescon show in California in September.

The company has made no predictions about production dates but commentators think it will be at least 12 months before users have received properly evaluated samples of these products.

Intel, which stole the limelight at ISSCC two years ago when it introduced the first 256K design, made no follow-up announcements, and company officials say that next year is the earliest the company will be producing the chip.

It is currently selling a 128K EPROM which customers in Europe are now receiving.

Intel revealed details of its new production process CMOS III. With this process, which can implement 1.5 micron technology using 2 micron ground rules, it should be possible to produce 256K chips. Texas Instruments has said little other than that it has a 256K RAM in development.

The Hewlett-Packard announcement, while essential to computer product development, has important implications for the technology needed to produce 256K chips with reasonable price and redundancy. The main race is in the six-chip microprocessor on a single chip, which is the 50% more than most other manufacturers have been able to achieve.

The whole chip is claimed to be in production at one-micron level. This is one to two orders of magnitude greater than any other known production technology.

With production at those levels of density, observers were surprised that HP had used six chips and a 128K RAM rather than, say, a 256K RAM and three chips.

But the key point at ISSCC was that none of the three Japanese contenders for early 256K production, Oki, Fujitsu or Hitachi, revealed their plans.

News from the Japanese came mostly in the informal sessions, although the Hitachi marketing plan which is available now in the UK shows that the company intends to start marketing a 194-nanosecond 256K EPROM in the summer and a 150ns 256K RAM in the autumn.

Officials from Oki were equally emphatic about their plans. The company has been shipping samples of 256K RAMs since last September, mostly to divisions of the company. Full production is said to be set for 1983.

Fujitsu, which sent a large number of delegates to the conference, was still maintaining its declared position of last year. The company has a 256K chip which will reveal in due course. NEC, which with Toshiba was a major participant in the VLSI project which produced the Japanese 256K design, is also reckoned to be either sampling or on the verge of sampling.

NEC/Toshiba, using a joint subsidiary, were reckoned to be the first to send samples of their wares to companies in America by autumn.

Just as the US has been piped to the post, for world market share, by early Japanese production of 64K technology, it now looks as if the US is about to lose out just as significantly in the next round.

THE 256K STATE OF THE ART

| Company | Chip | Technology | Access Time (nanoseconds) | Samples | Production |
|-------------------|------------|------------|---------------------------|-----------|--------------|
| NEC/Toshiba | 256K | CMOS | 200 | Sept 1981 | Early 1983 |
| Oki | 256K | NMOS | 150 | Oct 1981 | Late 1982 |
| Hitachi | 256K RAM | NMOS | 100/150 | Now | Autumn 1982 |
| Fujitsu | 256K EPROM | CMOS | 100/150 | Now | Summer 1982 |
| IBM | 288K | CMOS | 350 | Now | Not declared |
| Motorola | 256K RAM | CMOS | 100/150 | Sept 1982 | 1984/85 |
| Bell Labs | 256K | HMOS III | 105 | Late 1982 | Not declared |
| Siemens | 256K | | | 1983 | |
| Texas Instruments | 256K | | | | |

Only NEC/Toshiba have made price estimates, which suggest a price of about \$20/30 per unit. Only IBM predicts yields (good chips). It estimates yields of about 60% for the 288K chips.

US is losing 64K RAM fight

by Louise Kelsoe

AS prices for 64K dynamic RAMs continue to fall - the lowest prices are reported to be \$4 each for high volume orders for slow parts on a long delivery schedule - the prospects for any US semiconductor manufacturer making a profit in the market are fading.

"Although optimists look for some rebuying of prices, or even a slight rise as demand increases, others have already conceded the market to Japanese suppliers."

"Though one school of thought has it that the best defensive action is to forget the 64K RAM and concentrate on bringing a 256K RAM to market, others argue that US manufacturers have put too much money and time into the development of 64K RAMs to be then ousted."

Among the US manufacturers, Intel, National Semiconductor and AMD have still to bring a 64K RAM to market. Intel is rumoured to be on its fourth or fifth design - and still to be having problems. The company has put back the introduction of its product until the third quarter of the year.

National Semiconductor's 64K dynamic RAM is also still not available. It incorporates an innovative triple polysilicon layer that makes it more complex to produce.

Texas Instruments and Motorola are the only US manufacturers currently supplying 64K RAMs in volume. Motorola has recently introduced a newly designed part faster than its previous design. According to a company spokesman, the part is specified at 150 nanoseconds access, but is yielding well at 90 nanoseconds.

This will allow Motorola to supply 120ns parts when demand for faster RAMs picks up. According to industry sources, most customers are looking for 150ns access time now, although they expect demand for 120ns to pick up next year.

Motorola and Texas Instruments are between them estimated to hold about 30% of the world RAM market, but Japanese manufacturers supply the rest. TI has been more successful with the US mainframe manufacturers, while Motorola has sold a lot of parts to distributors and minor accounts. In the 64K RAM market, mainframe customers are said to account for only about 50% of the market - a much lower proportion than in previous generations of dynamic RAMs.

P-E's mini 'equals' mainframe'

by Maggie McLening

IN a bid to capture a slice of the mainframe market, Perkin-Elmer has added a new machine to the top end of its 32-bit minicomputer range, which it says gives mainframe performance.

The company strengthened its position in the minicomputer market by launching the low-priced 3210 model last year, to fight off encroachment by Data General, Hewlett-Packard and Digital Equipment, but now is aiming to extend its market on performance as well as price.

"There is an explosion of people wanting number crunching systems, particularly in the seismic and computer-aided design areas. The price of oil is making companies reprocess their old magnetic tapes of survey details," commented Fred Mascarenhas, Perkin-Elmer's product and marketing manager.

The new machine is a 32-bit "supermini", the 3250, and has been designed to handle large, complex applications such as scientific research, CAD/CAM and high performance commercial transaction processing.



MASCARENHAS... Perkin-Elmer bidding for a share of the mainframe market.

"It gives very high performance in TP applications: for any given level of VDUs, using the 3250 will give better response than a mainframe," said Roger Eden, Perkin-Elmer's new marketing manager.

A typical system including one Mbyte of memory, console, an 80-Mbyte disc drive, 75 ips dual density tape, floating point processor, battery back-up, 10 communication line ports and operating system costs £98,000.

A Universal Optimising Fortran compiler has also been announced by Perkin-Elmer for the whole range of 3200 equipment, including the 3250.

Software house moves to where the oil is

by Philip Hunter

UK SYSTEMS consultancy Systems Designers Ltd, SDL, has opened an office in Aberdeen to exploit the booming demand from the oil industry for real time software. It claims to be the first large technical applications house to have done so.

Until now SDL has specialised in real time communications and defence systems on minis and micros. "We are now moving into the energy side," explains SDL's business development manager Richard Marsden. "Our work on the defence side transports easily to industrial and especially energy applications."

SDL expects to take between £500,000 and £1 million worth of business on the software side of the energy industry in the next year. Already it has landed a £200,000 contract from a big oil company for a process control system.

SDL will be supplying turnkey systems and supplementary staff to oil companies for real time production, mainly in the business of

moving oil from the wells to land. It will also make contributions on the refining side, where microprocessors to monitor flows, viscosity and octane levels are already playing a major role.

"Aberdeen will be the Silicon Valley of the future," says Marsden. "Other software houses will soon follow us up there."

The Aberdeen office will be staffed initially from SDL's southern office, but will soon recruit local people. "We find it very difficult to recruit staff of sufficient calibre anywhere," Marsden complains.

SDL is budgeting for 40 new staff in 1982, mostly experienced systems engineers and consultants.

"We do take some graduates too," says Marsden, "but we don't let them out for a year or two until they are sufficiently experienced."

SDL employs 350 people, 260 of them technical staff. It turned over £7 million in the year ending December 1981, and has recently opened offices in Gloucester and Washington DC.



MARSDEN... "Our defence work transports easily."

Forty-one branches linked

by David Craver

A BRANCH teleprocessing system is being installed by the big Commercial Union insurance company, which will link computers at 41 branches. Almost £400,000 worth of data communications equipment has been ordered for the network from Thorn EMI Datatech, formerly known as SE Labs.

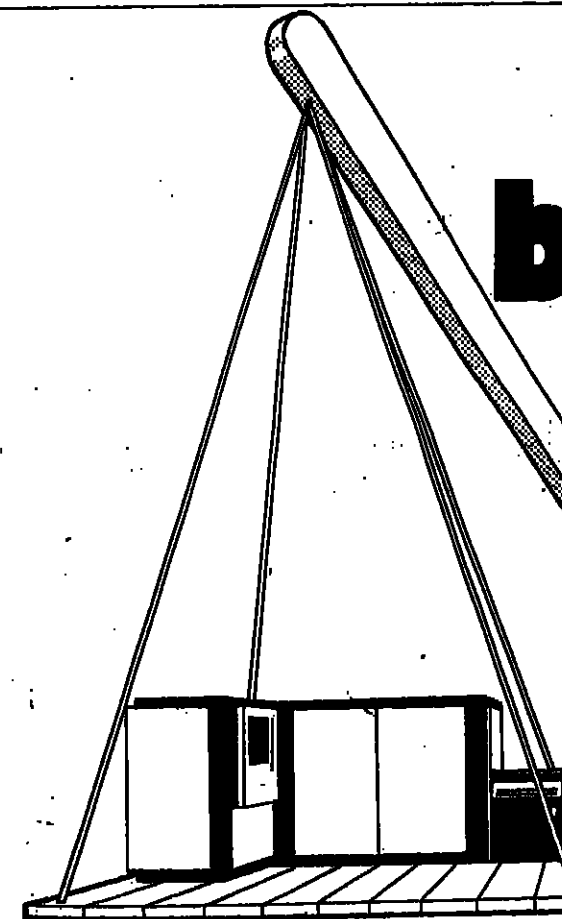
The network will allow all of Commercial Union's main branches to transmit new and amended policy information to the central computer in Whiteleaf, near Croydon. The data will be processed overnight on IBM main-

frames, and transmitted back to IBM 8100s located at the branches.

The branch teleprocessing system is being phased in at one branch a week, with all branches to be on the network by July this year. At first, the system will handle only motor and personal insurance, but will be extended to all other aspects of the company's business later.

The two types of Datatech models to be used in the network are the 9620 and the 4820, which operate at 9600 bits per second and 4800 bps respectively.

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National strategy is boosting Japan into fifth generation

In a year in which some of the most innovative managers in the computer industry, Gene Amdahl and Robb Wilmot among them, have identified one Japanese company, Fujitsu, as the likely source of the most advanced microelectronic technology for the remainder of the 1980s, it has become essential to try and understand exactly what the Japanese are planning to do in the computer field. And exactly how they intend to apply this advanced technology.

In the preliminary report on the fifth generation computer project which was released and discussed publicly late last year, the Japanese have done much to tell the world what they intend to produce in the next 10 years.

If they succeed they will hold the key not just to computer development, but to the oft-predicted application of computer technology for uses throughout society.

In this phase computers become the key factor in the conversion of data into information for decisions, and ultimately the devices on which mankind relies for the monitoring and control of society and its infrastructure.

In the preliminary report, the first thing the Japanese academics and industrialists define is what they expect the machines to contribute at a social or, if you like, political level.

In the first place, says the report, "fifth generation computers are expected to increase productivity in low productivity areas."

This hackneyed phrase conceals the most ambitious aim of all, which is to help make Japan self-sufficient in food.

The report identifies "farming, fishing, distribution and public service as four of the essential areas which have benefited the least from computers and automation so far."

Describing the failure to automate in those four areas as "the cause of serious social imbalance", the report elaborates the framework into which the fifth generation is expected to deliver its productivity goods. "The framework is a liberal, wealthy society which has overcome the constraints of resources and of energy."

The instinct is to dismiss those plans as pious eyewash, but the project and its aims are in the mainstream of the kind of grand national strategy which has pulled Japan from an also-ran into the lead position in one manufacturing industry after another.

The most pertinent of the pro-

jects for computer companies and users is the recently wound-up, £120 million VLSI scheme.

Using their technique of setting collective goals in a framework broader than the specific technology they are addressing, four Japanese companies will this year commence volume deliveries of 256K dynamic RAM chips. Nippon Electric, Oki, Fujitsu and Hitachi are already at this level of development while most computers use 16K memory chips and even 64K components are not universal.

Unlike the VLSI project, which ran for two and a half years, the fifth generation computer project will probably run for six or seven years. It will eventually be wound up by a combination of a complete transfer of the technology to general industry on the one hand, and on the other by the spread of specific applications to affect issues so broad that their use becomes a political decision.

Interestingly, the first aim of the fifth generation excludes all mention of military applications.

"Fifth generation computers will be a central tool in all areas of social activity," says the report,

"including economics, industry, science and art, administration, international relations, education, culture, daily life and the like."

As befits the Japanese method of avoiding direct statements where possible, this part of the report is littered with the implications of things left unsaid. But the ability to plan for a new generation of computers with no direct military application and built without military ends in mind will alone give Japan something like a two-year production lead on the Americans and a four- to five-year advantage on the Soviet Union.

This conclusion can be drawn from the level of funding and subsequent output which the US computer industry gets for military applications. Direct military "specification" funding was running at about \$3-billion in 1981, and will go still higher with President Reagan's latest plans.

Although military expenditure, particularly in the US, has always been credited with helping to get new developments into early commercial production, the Japanese are now saying that by creating a big enough social and political requirement, their technology can

similarly be driven to new heights of inventiveness.

This leads directly to the second and more overtly political goal of the fifth generation computer project.

According to the preliminary report, it is "to help Japan meet international competition and contribute towards international co-operation."

"Although we have mainly followed the lead of other countries in computer technology up to now," it goes on, "it is time for us to break with this outmoded tradition, and centre our efforts on the development of new computer technology based on our own conceptions, so that we can provide the world with new technology for international co-operation."

Again it is easy to dismiss this kind of language as sentiment. That, however, would be a failure to appreciate the strong element of pacifism within Japanese life.

Japan is very much a community. Concern for the community and unwillingness to go against its consensus colours much of what the Japanese do. It is in sharp contrast to the every-man-for-himself attitude inherent in the Western, and particularly American, commercial ethos.

The phrase "international co-operation" reveals that Japan is becoming increasingly conscious of the need to eliminate national barriers of trade before they can cause friction.

While clearly stating that the fifth generation project is Japanese, and will remain under national control, the participants from the government down are determined to state of them future complaints about competition by sharing the project with the world.

The report identifies four specific areas in which the Japanese foresee international co-operation under the fifth generation project. They are:

- Construction and maintenance of database;
- Development of language translation and interpretation systems;
- Improving productivity with the aid of intelligent robots; and
- Accelerating research and development by using intelligent CAD systems.

Another stated aim for the fifth generation computer project is one that will appeal to all practical souls, though, for the Japanese, being practical at the level at which this report was conceived virtually coincides with national survival.

The report says simply that the information technology industry (and particularly its fifth generation component) should assist in saving energy and resources. A country which has a shortage of land and a population density about 40 times that of the US cannot attain self-sufficiency in food using existing methods. And the current level of self-sufficiency in energy is only 15% and that of oil a mere 0.4%.

There is nothing in the report which overtly ties the plans for conserving resources to commerce and profit. But it is plain that any country which leads in systems of this kind will have very saleable products available for international customers.

The very general areas in which the Japanese expect fifth generation computers to make a significant improvement, are stated as:

- Level of energy use;
- Improvement of energy conversion efficiency;
- Simulators for use in developing new resources of energy;
- Reduction of energy consumption in production using CAD/CAM techniques;



Takayoshi Shiina, pursuing the fifth generation goal of getting computers power to the people, so that the next generation of computers will deliver genuine and widespread social benefits.

- Extension of product service life through damage detection and automatic recovery; and
- Reduction of the need to transport people unnecessarily by employing distributed systems.

The last of these aims, while among the most desirable when transport is a very large user of oil, may prove by far the most difficult to achieve. In essence it is the problem of why full trains pass each other every morning taking people to do essentially the same work, at about equally inconvenient points from where they live.

Which again raises the question of just how many of the benefits which fifth generation computers are supposed to provide can actually be delivered without political or social revolution.

The Japanese seem to be assuming that the benefits will be so attractive that the use of systems to obtain them will occur prior to the political changes (which will follow as the pattern of the new information society emerges).

In any case, issues such as these are at least over, for even the Japanese cannot plan so meticulously.

Finally, a stated aim of the fifth generation computer project is to help Japan cope with an aged society. By 1990 over 12% of the country's population will be 65 or older.

"Our society is ageing at an unprecedented rate," says the fifth generation report. "Accordingly, a great increase in medical expenses and welfare costs, together with a relative reduction in the labour force" could become big social problems.

The report gives examples of ways in which the fifth generation computer might contribute to the problem of an abnormally large elderly group within a population, but does so in a confused way.

It suggests:

- Improvement and streamlining of medical and related information processing systems;
- Development of systems for helping the physically handi-

- capped become active;
- Development of computer-aided information systems for the lifetime education of the aged; and
- Development of distributed processing systems for enabling people to work at home.

That final point might easily be overlooked because of its innocuous position in the report, but it is in fact a reflection of a key element in modern Japanese thinking about computers.

Take the story of a Japanese-style entrepreneur.

One of the great modern business success stories is Matsushita. A company with a turnover of \$13.6 billion was founded and run for many years by one man, Konosuke Matsushita.

When Matsushita retired he founded a university and started a magazine, with the title Peace, Prosperity and Happiness. Not the kind of banner to set the Western world alight, but nonetheless the name of one of the biggest-selling Japanese monthly magazines, commanding a circulation of over 1.2 million.

The content is about better ways to live. A central strand in Matsushita's philosophy, which has also emerged in the management philosophy of people like Takayoshi Shiina, the man behind microcomputer manufacturer Sord, is that one day computers will liberate us all from the curse of commuting and free us to return, Thoreau-like, to the land.

That one phrase about enabling people to work from home expresses more about the real direction in which the Japanese hope the fifth generation computer will take us than most of the rest of the report. In Japan land is scarce and homes are small. So working from home and going back to the land has huge social implications, many of which do not even apply to other parts of the developed world.

They are bound up with vast amounts to the report's closing word on goals. It is that the fifth generation must be developed and introduced with great care. Technology must not allow rulers to use computers as a tool for controlling subjects.

An admirable goal. If it can be achieved.

"Preliminary Report on Study and Research on Fifth Generation Computers, from Japan Information Processing Development Centre."

In the second instalment of this two-part report Kevin Cahill will examine how Japan intends to pursue its fifth generation computer goals.

SOFTWARE FILE

Systems house gets its fingers burnt over distribution rights

CONFUSION over distribution rights has forced a split in the UK marketing of a database management system for microcomputers.

Software house Infodata has learnt that its rights to the system, called FMS 80, which it bought from a US software distributor, are to be shared with Reading-based systems and software house Tero-dec.

In November last year, Infodata bought from Systems Plus what it

thought were exclusive rights to market FMS 80 in the UK. Shortly after announcing its availability, Infodata discovered that Tero-dec was also selling the product, having bought it direct from its designer, David Rodman of DJR Associates in the US.

Rodman claims that Systems Plus did not have an exclusive contract, and that although he knew that Infodata had approached Systems Plus, he had no

idea an agreement had been signed.

"It was done behind my back and completely without my knowledge," he says.

Negotiations between DJR Associates and Tero-dec started in mid-December when Paul Joyce, managing director of Tero-dec, visited the Comdex exhibition in Las Vegas. Joyce was impressed by a demonstration of FMS 80 that he saw on the Systems Plus stand, but he went direct to David Rodman.

The result is the FMS 80-based Tero-dec Information Management System (TIMS), which Joyce is now selling for use on any microcomputer with a CP/M or CP/M compatible operating system.

"David and I really understand each other and will do our best to work together," enthused Joyce. Rodman was equally enthusiastic about Tero-dec: "Other than pride of authorship, watching my children grow, it's exciting to see the product used as it was intended," he said.

One of the major reasons for the success of FMS 80 is the integral Shell 80 package which provides a uniform operating environment for it within CP/M, and is modelled on Unix, the portable time sharing system.

Infodata, though disappointed over what has happened, is also being philosophical, according to Paul Armour, marketing director. "If anyone has been bitten, it's Infodata," he commented. "Naturally this has caused us a few heartaches, but it's a very big market and I hope we can work well together."

Infodata is aiming at the manu-

facturers' market, while Tero-dec is trying to sell to dealers.

Infodata is now no longer dealing with Systems Plus. Rodman says that he has put Tero-dec and Infodata on an equal footing and both are now contracted directly to his company. He emphasised that what has happened is not Infodata's fault and that he does not want to see the company hurt by it.

Neither side will disclose the exact sums of money that have changed hands. Joyce of Tero-dec said that he had paid heavily for the product, while Armour commented that the price had not been unreasonable or excessive.

Systems Plus will not commit itself on the question of whether it did own exclusive rights for UK distributorship at the time FMS 80 was sold to Infodata.

"There was a lack of communication, and it was right in the middle of transferring the rights to DJR Associates," commented Sam Omron of Systems Plus.



JOYCE . . . "David and I really understand each other."

Westinghouse/On-Line deal

SYSTEMS software supplier Westinghouse Management Systems is to market packages for San Francisco-based On-Line Business Systems in the UK, Europe and the Middle East.

A specialist in products for the IBM market, Westinghouse has made significant growth through its low pricing policy.

To cement the deal, On-Line Business Systems has supplied Westinghouse with a program de-

velopment system called Wilbur, which may be able to act as an electronic mail system in a future version. At the moment it provides document formatting and RDP production capabilities to OS and OS/VS installations.

It can also offer a substantial reduction in the resource requirements of TSO in medium to large time sharing installations, according to David Hazlewood, UK manager of Westinghouse.

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Get more out of your ZX81!

The March issue of Your Computer looks at the growing range of memory expanders for the ZX81 and explains how they enhance the power of your basic unit.

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Consciousness of being part of a community and unwillingness to go against the common consensus is a major feature of Japanese life.



SHEARMAN... His prize-winning system automates testing of sheet steel for defects.

Testing device wins design award

MICROPROCESSORS pop up everywhere these days, even in competitions to encourage good engineering design.

A microprocessor strip-steel profilometer won Kevin Shearman of the University of North Wales in Bangor £250 in the 1982 Design Council Molins Design Prize. The contest is sponsored by Molins, a company known for precision en-

gineering.

Developed in conjunction with British Steel as a project for Shearman's final year as an engineering undergraduate, the system automates testing of sheet steel for defects. It also means that the testing can be carried out by unskilled personnel.

The device carries an ultrasonic transducer across a steel strip, tak-

ing thickness readings on its way, and giving an alarm if it detects defects such as deep grooves, laminations or peaks in the steel.

All this is controlled by an 8085, with memory, I/O and timers in a five-chip system. As a background to the program actually running the mechanics, programs analyse the data and activate the alarm, time sharing through interrupts.

Micro vendors polish up sales techniques for small business market

VENDORS are having to re-think marketing techniques for small business computers as micros take over from minis and mainframes. Lower cost hardware means direct sales calls are no longer feasible, and more efficient sales methods are needed to survive the growing competition.

According to a market research study from Frost & Sullivan, there are more than 100 microcomputer manufacturers jockeying to cash in on a retail computer market with millions of prospective buyers.

To get at these, microcomputer vendors are exploring a multiplicity of different distribution channels, using a wide range of advertising themes and media to awaken businessmen to the possibilities offered by computers.

The study is concerned with small business computer use in the US, where it estimates there are 3.5 million businesses employing

fewer than 500 people. Only 200,000 will have small computers by next year, the study estimates, leaving a market ripe for picking.

Small computers serving this will grow at more than 30% compared to less than 20% for large machines.

A user survey included in the study showed that the majority of users expect to spend less than \$20,000 on their systems, with Tandy and Apple systems the most frequently bought and the most often desired.

Nearly two-fifths of these were bought at retail outlets, with direct purchase from manufacturers running second. Despite this, it appeared that customers would prefer to buy directly from manufacturers.

Most retail sales are made through independently owned stores, the report says, but computer manufacturers' stores, including IBM, DEC, Xerox and Tandy (Radio Shack in the US) show good overall growth prospects.

The report warns, however, that "those stores that sell their own proprietary systems only are threatened by similar stores that offer a variety of products."

Office equipment stores and department stores are also beginning to get in on the act, though department stores are seen as catering more for home users than for business interests.

The report adds that the market for home computers is not strong yet, as was shown by the failure of Texas Instruments' 99/4 personal computer, targeted strongly at home educational uses.

OEMs dealing with small business computers are moving more into vertical markets, supplying specialised software for particular businesses like construction, sporting goods or food distribu-

tion, which are not accessible to retailers selling general packages.

More than half of the OEMs specialise, the report estimates, and they tend to supply microcomputer hardware rather than micros.

The Frost & Sullivan report confirms the findings of earlier studies about trends in microcomputer marketing in the US. "Companies are experimenting with the right marketing mix, using trial and error and quickly abandoning unsuccessful approaches."

"In the next several years, the main targets of computer marketing will shift from data processing professionals to businesspersons with no DP background."

Price is the most sensitive criterion for choosing systems, says the report. Application software, adequate terminals with full-size screens and colour graphics, is also high on customers' priority lists.

Timex sells ZX81 in US

IT is not quite a business computer, but the Sinclair ZX81 is a get wider marketing in the US through an agreement between Sinclair Research and Timex, the big US watch manufacturer.

Timex is already a microcomputer manufacturing the ZX81 microcomputers in its land. Under the marketing agreement it will sell the micro through its 175,000 US retail outlets under the joint Sinclair Timex range.

Sinclair's existing mail-order business based in Boston will continue until sales at the Timex outlets reach agreed levels.

All you want to know about home computers

LOOKING for the personal computer that really suits you and your family? Bemused by the abundance of software packages, cassette units, printers and terminals that you could use with the machine you choose?

Then maybe what you need is to visit the Computer Fair at London's Earl's Court from Friday, April 23, to Sunday, April 25.

The show covers personal computing, home computing, small business systems and the software and peripherals that go with them. It is designed to appeal to everybody, strongly featuring the second wave of personal computers catering for the needs - and purses - of the home computer buyer.

Special attractions at the show will include the ZX81 village, where some 30 companies will be demonstrating software and add-on hardware specifically for the Sinclair ZX81.

Visitors will also have the chance to see computer-controlled "mice" trying to find their way in the centre of a maze in the Mouse Contest. There will be knockout heats and the European British final. Last year's winner was a British entry.

The Computer Fair is sponsored by Practical Computing and Your Computer. For more information, contact Philip Kirby, Practical Computing, Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS. Tel: 01-661 3127.

Price cuts

SYSTEM products from Intel are to cost less, particularly to educational users.

Development systems and peripheral units are reduced by about 10%, as are in-circuit emulators. Single board computer products are reduced by up to 25%.

Educational discounts of 15%, which have applied for some time, apply to the new prices. Larger discounts, of up to 30%, are offered to educational users of Intel's software, including the range of high level languages.

The price reductions are seen as a move to persuade new users to standardise on Intel equipment from the start.

New to UK

A FULLY boxed system from Nascom Microcomputers, the Nascom 3, is now available from dealers in the UK and Europe. Like the earlier Nascoms 1 and 2, it is based on a Z80 processor. It comes with 8K or 32K memory, expandable to 60K.

The machine is aimed at the educational and business user, and can be configured with cassettes or floppies. Operating systems available include CP/M version 2.2 and NAS-DOS, Nascom's own operating system. The machine can run on Basic, interpreted and compiled, and Pascal.

Hardware, built in the UK, starts at £376, excluding VAT.

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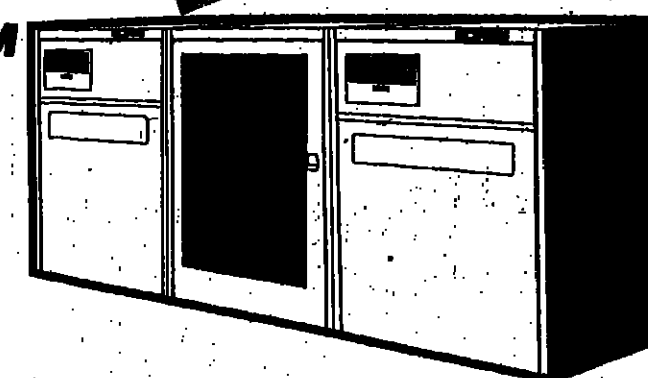
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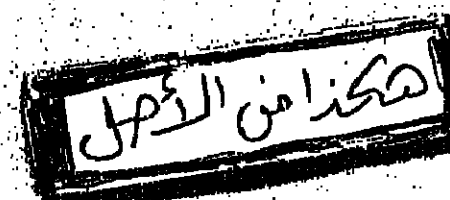
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WELLS... "High rewards, even in the early stages."

Software house sees 600% rise in micro package sales

THE UK packaged software industry for microcomputers is expected to grow to more than £100 million a year within the next two years.

The costs of getting into this potentially lucrative market are high, but the rewards even in the early stages are also high, according to Vince Wells, managing director of software house Omicron. He predicts that Omicron will move sales this year to £300,000, a 600% increase on last year.

It also represents a turnover of £50,000 per employee for Omicron's staff of six, which is no mean attainment in an industry where average turnover per employee is £22,184 (Greene and Co).

Wells emphasises that Omicron is still in the set-up phase. "We began the company two years ago with the aim of having our products ready for the market last July and August." In fact, it took Omicron six months longer than anticipated to get its product, a complete accounting system de-

signed to run on any CP/M microcomputer, fully operational. The complete package consists of six separate accounting functions: payroll, sales ledger, purchase ledger, general ledger, order entry, and stock control, and sells for about £700.

The way the complete package was put together illustrates the sacrifices inherent in going it alone, according to Wells. Throughout last year neither he nor his co-founder, Ron Sandford, took any money out of the company.

From the first discussion between Wells and his team about two-and-a-half years ago, the project has absorbed the best part of £100,000, most of it put up as loans by Lloyds Bank.

Wells, Sandford and software designer Bernie Beech put in £10,000 of their own money, and each gave up several years' earnings to get the company to the point where the product was ready for the market.

Wells believes they now have a world-beating product. He says that when Beech first suggested that the market for micro software packages was sorely in need of professionally prepared and supported software, he and Sandford immediately agreed.

All three have different backgrounds, but the common factor at the time was that they were all working for Rio Tinto Zinc on the financial software side.

Having decided that the product they wanted was a complete package which would integrate all aspects of accounting, and cover the needs of small and medium sized businesses, Beech took on the task of producing the six key programs from scratch. Work really began less than two years ago, according to Wells.

When they had the specifications clearly established and programming was under way they went to Lloyds Bank with a carefully prepared business plan which, Wells emphasises, concentrated on cash flow. With the initial £25,000 that Lloyds made available work began in earnest.

The slippage which occurred did not affect the cash flow projections, partly because Wells and his two partners had been ultra-cautious in their cost and revenue projections.

He says that when they agreed projected sales, they slashed the estimate in half. And when they finally agreed the cost of the various elements of the project, they doubled the estimate.

And Wells and the Omicron directors applied a rule to the package which would make most systems analysts blanch.

They decided from the beginning that the package to be released would be virtually fixed, and not designed for a series of constant updates.

This is tantamount to saying that the first release is the last and must by definition contain all the necessary accounting functions that are likely to be needed.

Despite the emphasis on caution Wells admits that the interest

shown in his product, even before it was available, was extraordinary.

The company has so far this no formal advertising, relying almost entirely on word of mouth. Wells describes the company's six months ago, when they first started to release details of the package, as "a mad-house." They were rushed off their feet with enquiries and advance orders.

To support its selling effort Omicron has made two limited investments other than directly in the software itself.

Concentrating all the time in the end user, and remembering that their dealers would want a product which needed to minimum of explanation and support, Wells and his partner spent heavily on a single set of clear and attractive brochures.

Allied to this was a minimal spend on training manuals and incorporated features which make the Omicron software easy to use.

The screens all come with help features and the user has virtually no contact with the system features which frequently mislead packages confusing to non-computer trained personnel.

Wells says that when they were specifying the packages they decided to treat a small business the sort of two- or three-year operation which would buy the software - as a big business's embryo.

That way Wells reckoned they got all the accounting features a large company would want as software that even a two-man company would need.

Wells describes Omicron as a software factory, turning out a complete product for the dealer and the end user.

He says the company is already very profitable, but cautions that in the start-up phase it is cash flow which brings most companies down.

Omicron got its product complete and into the marketing phase with a variation of only £1,000 on the original cash flow projections.

Californian link extends BCL product range

BUSINESS Computers (Systems), one of last year's entries to the Stock Exchange's Unlisted Securities Market, has linked up with a US company to introduce a new 16-bit computer system to the UK.

The financial community eagerly awaits the BCL results which are due next month. Managing director Mike Munnelly would not be drawn on the figures, but said the company had maintained its pattern of growth.

The link with California company Rexon gives BCL a major extension to its product range, according to Munnelly.

The Intel 8086-based system will be known as the BCL 3300 in the UK and is described as a powerful, multi-tasking computer which slots in at the top end of the BCL product line.

The line still contains the Molecular series machines and Munnelly revealed that sales of the Molecular system were still high, with 11 systems delivered in December.

He described the marketplace as very tough, with a lot of companies running just to stay in the same place.

He said many companies were now looking to computers to obtain productivity gains which were no longer simply a desirable goal, but a basic element of survival.

The president of Rexon, Dr Ben Wang, attended the launch which marked the first appearance of his machine in the UK. Rexon has



MUNNELLY... "Maintaining our growth pattern."

already sold over 200 systems in Europe, and Wang said that he was looking forward to working with BCL.

His own company, Rexon, was a relative newcomer to the computer industry, he said, but had already made him a millionaire and would shortly be going public in the States.

Wang described the product he was offering BCL as a well-established processor designed for businessmen by businessmen. He does not go in for pioneering products in your customers' offices in the sea," he said.



FEEENEY... Sales revenue up.

Profit and sales up at Hoskyns

PROFITS and sales turnover at London-based Hoskyns Group has continued the sharp upward trend of recent years. Sales revenue, 21% up on last year, passed the £20 million barrier for the first time, to reach £21.4 million.

Profits, which were badly hit in many companies last year, rose 36% pre-tax. After charging R&D against the trading results the final profit was £1.7 million.

Jim Feeney, Hoskyns' managing director, says that company policy of recruiting high quality staff over the years has paid dividends.

Two areas of Hoskyns' business have provided particularly large contributions. MAS (Modular Application System) software which runs on a wide range of machines, accounted for over 30% of turnover.

During 1981, Hoskyns made over £4 million in sales of its Crossroads service, which helps users to migrate from old and obsolete equipment to newer, more advanced kit.

US-Japan battle heats up in 64K chip market

THE Americans and the Japanese appear to be heading for a critical round of bickering over Japanese pricing and dominance in the emerging 64K memory chip market.

The first of these chips are now beginning to appear in commercial computers, such as the Fujitsu-made, ICL-marketed M380.

In Japan, the Ministry of International Trade and Development has already warned Japan's six largest semiconductor manufacturers, Fujitsu, NEC, Hitachi, Oki, Mitsubishi and Toshiba to exercise care in exporting to the US.

MITI has expressed most concern about the aggressive pricing attitude taken by the Japanese companies.

The US firms have been cutting prices themselves in the 16 and 64K RAM market, primarily to ramp up sales in a poor area. This has driven the price of a 16K RAM down by 75% to £1 in one year.

The 16K RAM market was initiated by American companies like

Mostek and Intel and the largest share worldwide was held by the Americans, with the Japanese making real inroads only in the past 18 months.

The extent of Japanese penetration has also been obscured by weakness in the American marketplace - not felt in the Far East where burgeoning production of consumer goods absorbed most of the Japanese production.

But the 64K RAM market has been initiated both in America and internationally by Japanese companies geared up to reverse the pattern of US domination in the earlier 16K market.

The 64K market started with prices of about £20 for a single chip delivered in volume, in the middle of last year.

Already, mostly under very aggressive marketing by the Japanese, that price has been driven down to £6 to £7 and a spokesman at Intel said that the company expected to see the price fall by 50% to about £4 by the end of the year.

In the wake of this price-cutting drive, the Japanese companies have captured just under 70% of the world 64K market. A recent Datquest survey, reproduced in the American business magazine Fortune, shows that Hitachi leads with 40% of the market followed by Fujitsu with 20% and Nippon Electric (NEC) with 6%.

Of the American companies, Motorola leads with 20% of the market and Texas Instruments holds 7%. Other American companies hold 3.5%.

The Fortune article, which complains of the Japanese victory in the 64K marketplace, ends by hoping that US companies might recover their dominance in future chip generations.

The magazine also shows that the Japanese have already begun sampling the 256K chip which is expected to follow the 64K, and which few American companies can hope to deliver before 1984 - by which time the Japanese expect to be in full production.

AGGRESSIVE marketing by the Japanese has driven down the price of 64K memory chips to a few pounds.

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Find out more about locating in Ireland. Contact the nearest office of the IDA Ireland for further details. We'll be glad to help.

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CW SHARES TABLE

| Date 22/02/82 | | | Index: 101.42 | | | Change - 0.46 | | |
|---------------|-----|-----------------------|---------------|-------|------|---------------|----------------|-------------|
| Firms | | London Stock Exchange | Price | | | US Stock | | |
| | | Stock | Price | C'ngs | | Stock | | Price C'ngs |
| High | Low | | | | High | Low | | |
| 102 | 101 | A Comp Tech (19p) | 173 | - 3 | 102 | 101 | Apple | 102 + 1 |
| 101 | 100 | BOC Inv. (20p) | 172 | - 7 | 101 | 100 | Auto Data Pro | 101 + 1 |
| 100 | 99 | Boe (19p) | 171 | - 2 | 100 | 99 | Barrington | 100 + 1 |
| 99 | 98 | Chubb (20p) | 170 | - 3 | 99 | 98 | Commware | 99 + 1 |
| 98 | 97 | Coa (19p) | 169 | - 8 | 98 | 97 | Comp Auto | 98 + 1 |
| 97 | 96 | Cash (21p) | 168 | - 1 | 97 | 96 | Contel Systems | 97 + 1 |
| 96 | 95 | Cable & Elec (20p) | 245 | - 8 | 96 | 95 | Control Data | 96 + 1 |
| 95 | 94 | Comet (19p) | 167 | - 3 | 95 | 94 | Cybernetics | 95 + 1 |
| 94 | 93 | Conley (19p) | 166 | - 3 | 94 | 93 | Dynatech | 94 + 1 |
| 93 | 92 | Consign (19p) | 165 | - 3 | 93 | 92 | Eveready | 93 + 1 |
| 92 | 91 | Ferranti (20p) | 164 | - 13 | 92 | 91 | GenCorp | 92 + 1 |
| 91 | 90 | GenCorp (19p) | 163 | - 13 | 91 | 90 | Graphic Arts | 91 + 1 |
| 90 | 89 | ICI (19p) | 162 | - 4 | 90 | 89 | IBM Corp | 90 + 1 |
| 89 | 88 | Intelsat (20p) | 161 | - 1 | 89 | 88 | Intel Corp | 89 + 1 |
| 88 | 87 | Intelsat (21p) | 160 | - 1 | 88 | 87 | International | 88 + 1 |
| 87 | 86 | Intelsat (22p) | 159 | - 1 | 87 | 86 | Logicon | 87 + 1 |
| 86 | 85 | Intelsat (23p) | 158 | - 1 | 86 | 85 | MCA Inc | 86 + 1 |
| 85 | 84 | Intelsat (24p) | 157 | - 1 | 85 | 84 | Microtek | 85 + 1 |
| 84 | 83 | Intelsat (25p) | 156 | - 1 | 84 | 83 | Minicom | 84 + 1 |
| 83 | 82 | Intelsat (26p) | 155 | - 1 | 83 | 82 | Modular | 83 + 1 |
| 82 | 81 | Intelsat (27p) | 154 | - 1 | 82 | 81 | Northern | 82 + 1 |
| 81 | 80 | Intelsat (28p) | 153 | - 1 | 81 | 80 | Oracle | 81 + 1 |
| 80 | 79 | Intelsat (29p) | 152 | - 1 | 80 | 79 | PerkinElmer | 80 + 1 |
| 79 | 78 | Intelsat (30p) | 151 | - 1 | 79 | 78 | Rockwell | 79 + 1 |
| 78 | 77 | Intelsat (31p) | 150 | - 1 | 78 | 77 | Sony Corp | 78 + 1 |
| 77 | 76 | Intelsat (32p) | 149 | - 1 | 77 | 76 | Sperry Corp | 77 + 1 |
| 76 | 75 | Intelsat (33p) | 148 | - 1 | 76 | 75 | Strattek | 76 + 1 |
| 75 | 74 | Intelsat (34p) | 147 | - 1 | 75 | 74 | Tandem | 75 + 1 |
| 74 | 73 | Intelsat (35p) | 146 | - 1 | 74 | 73 | Tecon | 74 + 1 |
| 73 | 72 | Intelsat (36p) | 145 | - 1 | 73 | 72 | Texas Inst | 73 + 1 |
| 72 | 71 | Intelsat (37p) | 144 | - 1 | 72 | 71 | Thomson | 72 + 1 |
| 71 | 70 | Intelsat (38p) | 143 | - 1 | 71 | 70 | Wang Lab | 71 + 1 |
| 70 | 69 | Intelsat (39p) | 142 | - 1 | 70 | 69 | Wyle | 70 + 1 |
| 69 | 68 | Intelsat (40p) | 141 | - 1 | 69 | 68 | | |
| 68 | 67 | Intelsat (41p) | 140 | - 1 | 68 | 67 | | |
| 67 | 66 | Intelsat (42p) | 139 | - 1 | 67 | 66 | | |
| 66 | 65 | Intelsat (43p) | 138 | - 1 | 66 | 65 | | |
| 65 | 64 | Intelsat (44p) | 137 | - 1 | 65 | 64 | | |
| 64 | 63 | Intelsat (45p) | 136 | - 1 | 64 | 63 | | |
| 63 | 62 | Intelsat (46p) | 135 | - 1 | 63 | 62 | | |
| 62 | 61 | Intelsat (47p) | 134 | - 1 | 62 | 61 | | |
| 61 | 60 | Intelsat (48p) | 133 | - 1 | 61 | 60 | | |
| 60 | 59 | Intelsat (49p) | 132 | - 1 | 60 | 59 | | |
| 59 | 58 | Intelsat (50p) | 131 | - 1 | 59 | 58 | | |
| 58 | 57 | Intelsat (51p) | 130 | - 1 | 58 | 57 | | |
| 57 | 56 | Intelsat (52p) | 129 | - 1 | 57 | 56 | | |
| 56 | 55 | Intelsat (53p) | 128 | - 1 | 56 | 55 | | |
| 55 | 54 | Intelsat (54p) | 127 | - 1 | 55 | 54 | | |
| 54 | 53 | Intelsat (55p) | 126 | - 1 | 54 | 53 | | |
| 53 | 52 | Intelsat (56p) | 125 | - 1 | 53 | 52 | | |
| 52 | 51 | Intelsat (57p) | 124 | - 1 | 52 | 51 | | |
| 51 | 50 | Intelsat (58p) | 123 | - 1 | 51 | 50 | | |
| 50 | 49 | Intelsat (59p) | 122 | - 1 | 50 | 49 | | |
| 49 | 48 | Intelsat (60p) | 121 | - 1 | 49 | 48 | | |
| 48 | 47 | Intelsat (61p) | 120 | - 1 | 48 | 47 | | |
| 47 | 46 | Intelsat (62p) | 119 | - 1 | 47 | 46 | | |
| 46 | 45 | Intelsat (63p) | 118 | - 1 | 46 | 45 | | |
| 45 | 44 | Intelsat (64p) | 117 | - 1 | 45 | 44 | | |
| 44 | 43 | Intelsat (65p) | 116 | - 1 | 44 | 43 | | |
| 43 | 42 | Intelsat (66p) | 115 | - 1 | 43 | 42 | | |
| 42 | 41 | Intelsat (67p) | 114 | - 1 | 42 | 41 | | |
| 41 | 40 | Intelsat (68p) | 113 | - 1 | 41 | 40 | | |
| 40 | 39 | Intelsat (69p) | 112 | - 1 | 40 | 39 | | |
| 39 | 38 | Intelsat (70p) | 111 | - 1 | 39 | 38 | | |
| 38 | 37 | Intelsat (71p) | 110 | - 1 | 38 | 37 | | |
| 37 | 36 | Intelsat (72p) | 109 | - 1 | 37 | 36 | | |
| 36 | 35 | Intelsat (73p) | 108 | - 1 | 36 | 35 | | |
| 35 | 34 | Intelsat (74p) | 107 | - 1 | 35 | 34 | | |
| 34 | 33 | Intelsat (75p) | 106 | - 1 | 34 | 33 | | |
| 33 | 32 | Intelsat (76p) | 105 | - 1 | 33 | 32 | | |
| 32 | 31 | Intelsat (77p) | 104 | - 1 | 32 | 31 | | |
| 31 | 30 | Intelsat (78p) | 103 | - 1 | 31 | 30 | | |
| 30 | 29 | Intelsat (79p) | 102 | - 1 | 30 | 29 | | |
| 29 | 28 | Intelsat (80p) | 101 | - 1 | 29 | 28 | | |
| 28 | 27 | Intelsat (81p) | 100 | - 1 | 28 | 27 | | |
| 27 | 26 | Intelsat (82p) | 99 | - 1 | 27 | 26 | | |
| 26 | 25 | Intelsat (83p) | 98 | - 1 | 26 | 25 | | |
| 25 | 24 | Intelsat (84p) | 97 | - 1 | 25 | 24 | | |
| 24 | 23 | Intelsat (85p) | 96 | - 1 | 24 | 23 | | |
| 23 | 22 | Intelsat (86p) | 95 | - 1 | 23 | 22 | | |
| 22 | 21 | Intelsat (87p) | 94 | - 1 | 22 | 21 | | |
| 21 | 20 | Intelsat (88p) | 93 | - 1 | 21 | 20 | | |
| 20 | 19 | Intelsat (89p) | 92 | - 1 | 20 | 19 | | |
| 19 | 18 | Intelsat (90p) | 91 | - 1 | 19 | 18 | | |
| 18 | 17 | Intelsat (91p) | 90 | - 1 | 18 | 17 | | |
| 17 | 16 | Intelsat (92p) | 89 | - 1 | 17 | 16 | | |
| 16 | 15 | Intelsat (93p) | 88 | - 1 | 16 | 15 | | |
| 15 | 14 | Intelsat (94p) | 87 | - 1 | 15 | 14 | | |
| 14 | 13 | Intelsat (95p) | 86 | - 1 | 14 | 13 | | |
| 13 | 12 | Intelsat (96p) | 85 | - 1 | 13 | 12 | | |
| 12 | 11 | Intelsat (97p) | 84 | - 1 | 12 | 11 | | |
| 11 | 10 | Intelsat (98p) | 83 | - 1 | 11 | 10 | | |
| 10 | 9 | Intelsat (99p) | 82 | - 1 | 10 | 9 | | |
| 9 | 8 | Intelsat (100p) | 81 | - 1 | 9 | 8 | | |
| 8 | 7 | Intelsat (101p) | 80 | - 1 | 8 | 7 | | |
| 7 | 6 | Intelsat (102p) | 79 | - 1 | 7 | 6 | | |
| 6 | 5 | Intelsat (103p) | 78 | - 1 | 6 | 5 | | |
| 5 | 4 | Intelsat (104p) | 77 | - 1 | 5 | 4 | | |
| 4 | 3 | Intelsat (105p) | 76 | - 1 | 4 | 3 | | |
| 3 | 2 | Intelsat (106p) | 75 | - 1 | 3 | 2 | | |
| 2 | 1 | Intelsat (107p) | 74 | - 1 | 2 | 1 | | |
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Never feel safe with human-made systems

The Eighth Law of Reliability: All real programs contain errors which will prove otherwise - which is impossible.

We must never feel 100 per cent safe with programmed systems. Like any other human-made systems they are ultimately subject to failure. We have to consider this in our total system design, and prepare the way for detecting these failures.

It is the responsibility of the systems architect (Infotect) to consider every possible system component failure and to have a satisfactory alternative ready for use. In too many environments there is no such Infotect, and programmers are left to do the best they can.

But, according to this law their best is not enough to prevent failure.

Perhaps as a temporary measure, those programmers who find there has not been adequate design work to prevent program failure from hurting the users, can undertake the responsibility of designing adequate protection against the programmed errors. At the very least, any programmer who accepts this law, is morally responsible for warning system users not to rely too strongly on a single program. And to "campaign" for adequate back-up measures to be designed into the system in advance.

John R. Garman, deputy chief of the Spacecraft Software Division of NASA, shared the tale of a very public software error which delayed the first Shuttle orbital flight on April 10, 1981 (ACM Software Engineering Notes, Oct. 1981). He says, "There was a bug - a very small, very improbable, very intricate, and very old mistake in the initialisation logic... It was the type of mistake that gives programmers and managers alike nightmares... It was the kind of mistake that 'cannot happen' if one follows all the rules of good software design and implementation. It was the kind of mistake that can never be ruled out in the world of real systems development... Software is the easiest to change... but in change, it is the easiest to compromise."

He then goes on to explain the extraordinary measures taken to reduce the probability of such embarrassing errors happening live before world television audiences.

As a starter, the primary system consists of four replicate on-board computers - in case one fails, you still have a two out of three "voting" system for automatic correction of an error in one of the remaining three. But the four programs in the four computers are identical and a bug in one of them will occur in all of them.

So there is a fifth computer on board with a program developed in the same programming language, to the same requirements specifications, and with the same compiler as the primary four computers software. But it was developed by "an entirely different and remote organisation" (Rockwell International, California, as opposed to IBM Federal Systems Division, Texas, for the primary system).

The systems also used entirely different operating systems developed by the same two software suppliers.

The software bug was complex to describe - Garman used ten pages. But it was detected when one of the systems tried to monitor what the other was doing. The long list of error detection strategies which had failed to detect the

problem only adds to my conviction that "operational testing" is a necessary part of highly reliable systems.

I don't mean that this applies to all programming, any more than the use of multiple computers does. But we have to destroy the widespread illusion that "software does not wear out." It hides faults just as do materials with potential faults. And it can be corrupted by the forces of change - one half of all programming activity today is maintenance - just as surely as nature corrupts materials.

Garman says it too, since the bug was a result of a maintenance change. "The lesson from the bug that I plea is directed to the academic and software engineering community: help us find ways to reliably modify software with minimum impact in time and cost. Not perfect reliability, because projects will change - one half of trade for time and cost."

In my worst moments of despair, such as when considering the tens of thousands of known bugs in the operating systems of major manufacturers (ask your systems programmer), I have a consolation.



Tom Gilb is an independent consultant, lecturer and author on computing topics.

Each of us has about 30,000 million bacteria in our bodies; and no more hope than Howard Hughes of getting rid of them. Fortunately nature has provided our body systems with an equivalent amount of anti-bodies and white blood cells, as well as a suitable body component redundancy: so we survive fairly well day to day.

I hope you have provided your programmed systems with as much protection against the inevitable bugs as has nature done for you.

Tom Gilb

Your life in the data stars

FOR long the champion of all matters computing, the National Computing Centre appears to have changed sides. In a promotional campaign the organisation is now declaring, "Computers do not solve problems, they create them."

The NCC does not appear to be proposing any alternative - apart perhaps from advising would-be computer users to make use of the latest British Telecom service Starline which provides a national daily horoscope. The star predictions are plotted with the aid of a computer which can chart the position of the stars to a high degree of accuracy. Whether the general assessment of the astrological influences will give prospective computer users reassurance, inspiration or despondency can only be discovered by a call to the stars.

Few DP teams will have time to consult the Starline oracle. They will be far too busy dealing with more practical and down-to-earth problems - such as basic matters as freeing the jammed line printer, clearing jammed workload backlogs and coping with the jammed mass of motorbikes clustered around the installation door.

Any calls to British Telecom will be more concerned with the delivery of the long-awaited modem, extension phones, personal telephones and international tariff rates, than establishing astrological datacom lines. Similarly, calls to the NCC are more likely to be requesting data on standards for interfacing procedures than seeking solutions to standard problems.

A major role of DP management - one which emerges on the day of the implementation of a new system, application package or fresh operational input procedures - is distributing considerable doses of confidence and reassurance.

At a time when all about us and the installation are surrounded in an unseemly sea of engineers, cables, oscilloscopes, equipment and services supplies and demands, it is the duty of the DP to assure his team, his users and his senior management, that all will be right - if not on the night, at least not long after.

Large doses of confidence planning would seem to be a better form of insurance policy than a hor-line to the stars. Reciprocal arrangements with a nearby installation does much for the DP's peace of mind and drink intake. Knowing that if the alarm bell have to be triggered, then practical help is available given time, manpower and a little organisation, enables the DP management team to view almost with equanimity all manner of disasters, tribulations and misfortunes.

The DP must never be seen to reflect care and concern, at least in public. While in the privacy of his own office, he may well rave and rant at his secretary, at the system manager, at the field engineering manager and anyone else who happens to cross his data path, outside the sanctuary of his den the DP must adopt a laid-back, relaxed attitude.

The "altered images" approach is important if the DP is to keep control of the situation, and the respect of all involved. It may also help him keep his job. When the situation does improve, the DP will be hailed as a wise and capable organiser on whom the organisation can depend.

The responsibility of DP management in any case is now extending far beyond that of data communication technology. Spreading datacom and micro-lightenment across all levels of the organisation is the top priority.

Alan Simpson

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, February 25, 1982

Market forces the issue

PERFORMANCE problems with IBM's 3081 model D mainframe computer do not, as might at first be imagined, reflect technical problems. Rather they stem from the highly competitive market conditions between the giant and its plug compatible rivals.

European users, especially in West Germany, are complaining of performance shortfalls which are due to the fact that the 3081D does not make use of its genuinely advanced processor. It was launched because marketing considerations required a counter to advanced products like the M380H from Hitachi.

The trouble stems from the "dyadic" processor of the 3081 and its restricted input/output facilities on the model D. What is now clear is that the machine announced by IBM in the autumn of 1980 was not the first true H-series machine at all; it was merely an extension of the 303X-series using old software and new hardware.

This did not become clear until late last year when IBM announced its 3081 model K processor, which is a genuinely new generation machine.

No doubt the speculation about whether or not the initial 3081 announcement was the first of the H-series provided innocent amusement to IBM's marketing men. It was a classic example of the company manipulating its watchers, not least those of us in the media, by committing the sin of omission. The omission in this case was the failure to make clear the difference between the D and subsequent models.

It is unlikely that those users now discovering that the truth of the matter is to their disadvantage are also amused. In fact, angry 3081D users in West Germany are clubbing together to see what pressure they can bring on IBM.

IBM Germany talks glibly of adapting the computer environment to the level of performance offered by the 3081. How this can be achieved is not immediately clear, since some of the peripherals necessary, notably the high speed, high capacity and much delayed 3380 disc drive, are not yet available.

One thing is clear, though. It is that all the users which ordered and took delivery of their new machines before the 3081K and its operating system Extended Architecture (MVS/XA) was announced now face unexpected software bills if they are to obtain the full performance of their systems.

Essentially all 3081 users need three operating regimes: a version of IBM's big machine operating systems MVS which will allow them to run their existing applications software, and which has been released as MVS/370; the 3081's own MVS/XA operating system; and VM/370, the migration tool which allows the two operating systems to run on the same hardware concurrently.

Buyers of the 3081 model K fully understand that. Unfortunately, initial buyers of the 3081 model D did not.

Buying them off?

GOVERNMENT has performed the seemingly impossible feat of offering a whopping pay increase and still upsetting the unions. It has done so by exempting DP staff at installations like the Inland Revenue, the Department of Health and Social Security and the VAT centre from the guidelines covering this year's Civil Service pay award.

All civil servants are to be restricted to a 5 1/2% maximum increase, and 65,000 can expect no rise at all. Yet DP staff are eligible for additional bonuses which could mean up to 18% more for some of them.

At the back of the collective Whitehall mind there is the belief that DP staff, who were at the forefront of the industrial action in 1981, can be bought off, thus removing the civil service unions' most effective weapon in any future conflict.

Divide and rule is a useful technique if a quick settlement to negotiations is needed. And it may well be that government DP staff will take the money and run, abandoning their clerical colleagues in the process. But it's no way to run a happy Civil Service.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by A. J. Derbyshire of Romsey, Hants, who wins £5.

It takes 30 men working day and night for a year to make as many mistakes as a computer can make in 30 seconds.

Southern Evening Echo

LETTERS

Pascal toothcomb

THE Hull University Prime V-Mode Pascal compiler (HVP) detects eight errors in the example program given in your issue on Pascal errors (CW, February 11) of which six, not five, require attention in order to create a valid program. These errors are, in order of detection:

1. No semicolon before CONST
2. Improper use of NIL
3. # should be <
4. OUTPUT not specified in program header - occurs twice
5. + incorrect with this operand
6. Leading zero missing from REAL constant

- Secondary
7. Illegal expression - due to 1, 2 and 3
8. Incompatible parameter - due to 2, 4 and 5

It is well known that errors can be classified as primary and secondary, the latter being detected as a result of confusion following the occurrence of a related primary error. Correction of all primary errors should be sufficient to clear all the secondary errors as well. It is the task of error recovery in compilers to minimise the flagging of secondary errors, and good compilers should distinguish between the two types.

However, it is often difficult to determine which of a group of re-

lated faults is the primary and which are secondary. This is illustrated by your explanation of the fourth error on list, "NIL cannot follow a sign".

Although this statement is true, it is an inaccurate description of the error. A better explanation is that "+" cannot be applied to a character. The error concerning misuse of NIL has already been detected within the CONST declaration and a global change of NIL to NULL will not solve the problem - you have to remove the sign as well.

Also you fail to point out a sixth error which is the first to be found: no semicolon before CONST. For some unspecified reason, a semicolon appears in the "corrected" version, as it should.

Finally, it is incorrect to state that the program "must" contain OUTPUT as a parameter. A perfectly valid Pascal program can be written with no reference to either INPUT or OUTPUT - although it would not be much use without some other communications. These can be represented by any legal identifier given appropriate declarations, with quotation as the first parameter of READ, WRITE, etc.

JOHN D. RAYNER
Research assistant
University of Hull.

Cobol discs packed

READERS may be interested in a program that reduces the requirements for disc space and eases security problems for Cobol source files held on ICL 1900 2903/4/5 and 2900 running under DME.

The program, #Coco, is marketed by CHC Software in Reading. It enables any number of Cobol source files to be held in a single library file and at the same time, compacts source lines so that use of disc space is reduced by 65%-75%.

Editing programs is performed by #Coco using the same edit

commands as the normal compiler. The editing can be "in situ" or file to file. We are a 2904 site that has a heavy program development load and have found the #Coco system to be excellent. It has dramatically increased the speed, ease of editing and maintenance of our Cobol source programs. This is due to #Coco's simplicity of use and its very fast speed of processing.

A. ETHERINGTON
Operations manager
Dept of Health and Social Security
London, SE1.

OS9 not quite complete

I WAS interested to read (CW, February 4) of Microware's OS9 operating system. We have been using this system for several months, and have discovered several problems.

The system should be available in two versions, Level One for 6809 systems with up to 64 Kbytes of memory, and Level Two for larger systems. Level Two is as yet unobtainable.

The excellent interactive word processor, with which this letter was written, is incomplete, in that it is unable to support proportionally spaced printers, even although it is advertised as having this capability. It would appear that Microware has decided that it will no longer support the current

version of Stylograph, and customers must wait some unspecified time with a partially functioning version, until it releases the new version.

For the same reason it cannot supply the source for this program. The "Pascal written in-house" as Mr Kaplan puts it, may well be written in-house, but it cannot be obtained either.

In our case these shortcomings are not serious but I feel that Posttron, which I see has decided on OS9 for its machines, would be well advised to wait for the finished system to appear and be fully tested.

DAVID COWAN
Dept of Applied Physics
Durham University.

Liveware File

by Dou

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OSM 1154P

Get your own back

ARE you the lucky recipient of personalised letters from large publishing corporations? "Dear (your name here, probably misspelt), have you ever wished that out of all the residents in (your street name here), (your town here), you had (this week's special Once-in-a-lifetime offer)? Imagine how envious your next-door neighbour's who moved out two years ago (name here), and your other next door neighbour's who died in 1942, (name here) will be when they see you (whatever you will be doing in/on/with/to the special offer).

And so it continues - three or four pages of gushing prose on their latest opus.

But who is to blame for all this rubbish which pours in a relentless stream through your letterbox?

Computers, that's who. Like to get your own back on the little horrors? Then send me your suggestions on how to do it. The best entries (and probably the worst too) will be entered for our lucky prize draw.

Theatre farce

A PARTY was booked into the Theatre Mirocine in Brussels, which has adopted a computer booking system. Result: 14 were placed in the stalls, two in the circle and two in the grand tier box which was shared with a large Belgian family, and a drunk who thought he had booked for a ballet. There were eight empty seats next to the main group in the stalls.

Chad is off to Brussels tomorrow with his interactive debugging tool.



"I see that you can't afford to sue us for breach of privacy, Mr Smith."

Every home should have one

A SHOW house to demonstrate technology that will be available for domestic use by 1987 is being built in Milton Keynes as part of Information Technology Year.

It will incorporate smoke detectors, burglar alarms, humidity controls, personal computers, video and other devices.

There is, however, one application significant for its absence - hot water beds.

I can tell you first-hand that sleeping on a water bed in a cold room is a nightmare. The reason is that water has a very high specific heat, so the bed shows little response to the half-kilowatt or so of naked flesh in contact with it during the night.

So please, let's have a hot water bed in this new house.

What a game!

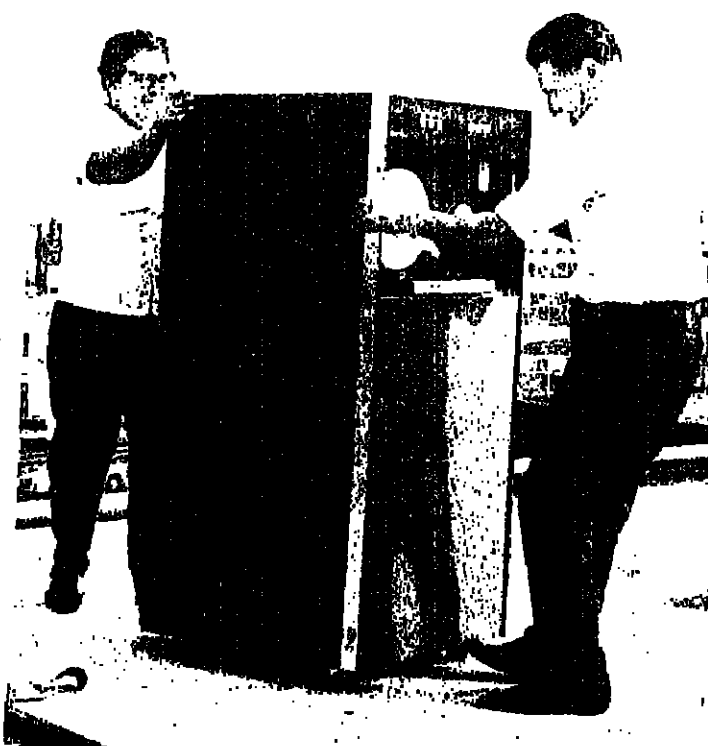
COMPUTER Weekly's Behemoth 9000 mainframe has come up with a splendid new method for boosting circulation. Hot on the heels of the national dailies' Casino and Bingo competitions, comes CW Roulette.

While the mundane tabled games have only one winner (in theory), CW Roulette guarantees £250,000 weekly, to be shared equally between 50 million winners. This means that each competitor can rely on winning 1/50. Unfortunately, banks refuse to deal in 1/50s, so we will, regrettably, and emphatically, have to keep the money ourselves.

Chad

by Philip Hunt

Spoon-feeding programmers on portable pie in the sky



System portability gets more difficult the more that thought is put into it.

PROGRAM portability is like Einstein's General Theory of Relativity. While many people know something about it, few know exactly what it is.

Certainly portability is no easy matter. For one thing, it creates a dilemma for designers of computer languages — how to offer the most powerful facilities while encouraging programmers to write code that will transfer easily between machines?

Let's have an example: Algol allows the following code: for x := -2 step 0.1 until 2 do r := r + 1;

In theory this loop should execute 41 times, but on some compilers it will only execute 40 times. This is because real numbers are not held with complete accuracy by compilers. When we expect x to attain the value 2, it might in fact be 2.000000001 and so cause control to pass out of the loop one cycle too soon.

In my rather banal example, one could equally well have written: for x := -20 step 1 until 20 do

But there are cases where using decimal numbers as step parameters makes what is being done clearer.

Basic also allows decimal numbers as loop parameters, but then Basic allows all sorts of odd constructions. Since it is rarely the same from one machine to the next, Basic is only recognised as a language on account of being just about the easiest way of learning to communicate with a computer.

No other serious language allows decimal numbers as loop parameters, and as is shown by my example, their use at once reduces portability almost to nil.

There are three considerations to portability:

1. Computer word size and arithmetic.
2. Operating system.
3. Language.

My example enters the first of these categories, because it has nothing to do with the operating system and would execute on any machine supporting Algol. But it could produce different results on different compilers, and clearly the first prerequisite of portability is that consistent answers should be achieved.

The successful implementation of software relies on the hospitality of the host operating system, and this is completely manufacturer dependent. It is true that there are now attempts to define operating systems and environments, but there will for some time be features peculiar to each manufacturer.

Total portability is just pie in

only because it is the least likely to be achieved. People who write machine independent code do not know what it is and it is specific to their own development machine. To suggest that they have to be thus spoon-fed is insufferable slight!

Where a language has been implemented with non-standard features, the compiler should distinguish between two error types: those that abuse the standard, and those that abuse the compiler's self.

It will then at least be possible to produce programs guaranteed to compile on any machine that supports the standard. It will be possible to use any non-standard features for local programs such as mickey-mouse drawing routines.

This has already been done by some companies which have written high-level language software for implementation on a variety of mainframes. The body of the code is in this case written in the company's own machine independent language, which is then compiled by a preprocessor into code that will run on the host machine.

Clearly a separate preprocessor has to be written for each machine to allow for such differences as word size and arithmetic precision, and the local operating system.

This preprocessor will be the only machine dependent part of the system and will flag any code that cannot be converted into standard object code on the host machine.

The first prerequisite is that consistent answers be achieved

the sky anyway, and there will always be some work necessary to move programs from one machine to another, even if it's just changing a job control statement.

In the case of languages, the question is: Should portability be thrust down the programmer's throat by eliminating everything non-standard? Or should there be a host of non-standard options available for ephemeral programs which have no hope of seeing daylight on a different machine?

I favour the latter approach, if

Don't just sit there, Do Nothing

THERE is one simple command lacking from all existing computer languages — the command DO NOTHING. For the sake of structure something must be done about it.

This request came from a correspondent in New Zealand, who pointed out that most languages have commands that do nothing without admitting to it.

A good structured program should make clear exactly what it is doing, and often the existing inert commands lead to ambiguity. Cobol, for example, has the command EXIT, which is in fact just a cosmetic nicety. It does nothing at all.

It sounds as if EXIT causes control to pass from the current program module into a higher level module. But it only does this when placed at the end of module when control would pass out anyway. Let's face it, the word is confusing.

Cobol has another "do nothing" command: the full stop.

A Cobol programmer wishing to send out an invoice only when there has been a sale to a customer would probably phrase it like this:

IF (there is already sale for this customer)

send out an invoice.

get next customer

Notice the full stop after the word "invoice". It is missing, the command "get next customer" would be executed only if there had been a sale. As it is, it will always be executed.

The full stop is certainly an economical way of saying nothing, but prone, shall we say, to overnight omission.

Fortran has the closest to a DO NOTHING, with its CONTINUE statement. But it was not designed for this purpose. The original definition of Fortran had anything but good structure in mind.

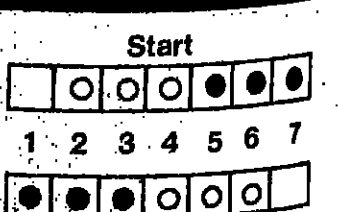
No, Fortran's CONTINUE was provided to bring a little clarity to tortuous chunks of code by indicating the end of iterative DO loops, and also specifying branch points. Because its use is not mandatory, it is doubtful if overall confusion is reduced by its presence.

Structuralists urge that every IF should have an ELSE associated with it. It is only logical that it should be possible to write ELSE NOTHING.

PUZZLER

IN this moving-counter problem, you are asked to reverse the places of three white discs and three black discs on a seven-square grid, using only 10 moves and taking advantage of the vacant cell in order to manoeuvre. The grid is numbered 1 to 7, to assist the would-be solver.

Each "move" must consist of (a) shifting a disc one square left or right; (b) jumping over a single immediately adjacent disc of either colour to a vacant square beyond; or (c) jumping over two immediately adjacent discs of either or



both colours to a vacant square beyond. If you like, the discs can be regarded as frogs having certain "leaping capabilities". See page 53 for the 10-move solution.

OP SPOT

'Sparks' shocker takes the biscuit

A NATIONAL biscuit manufacturer has an online terminal in a warehouse which is rented from a national transport undertaking and the installation is regarded with some awe by the local biscuit staff.

Great care is taken to ensure that planned power supply interruptions do not occur in working hours.

But last September a crane owned by the transport undertaking had an unexpected and illuminating meeting with some overhead power lines, and blew one of the phase fuses — though not the one which supplied our innocent little system with nourishment.

Being a complex system with a number of three-phase motors, the volts did not merely die, but

DISASTER

danced around merrily for a nanosecond or two, upsetting the poor terminal.

The manager called in electricians to rectify the fault, and expressed concern that, although the lighting and power were rapidly restored, three vital pieces of equipment were knocked out: the fridge holding milk for the workers' tea, the computer and, most importantly, the PA system.

Luckily, one of the electricians had some experience of amplifier faults, quickly restored the fuses, and began soothing troubled brows with music.

But could the computer be brought back into action? Without it, orders would have to be handwritten and telephoned to head office at great expense.

A check revealed that the processor could be reset, and the modem made operable with a little help over the phone from the BT engineers, but the printer had definitely died despite its fuse protection.

"Wot, no computer?" wailed the clerk, visualising a mass of written returns (and it was Friday afternoon).

"Don't panic," interjected the engineer, growing more confident with each device repaired. "Surely you can do the transactions without hard copy, get them printed at head office and posted to you on Monday."

And so it was that all was put back in order — except the fridge which was left DIP (defrosting in peace). And the clerk began clearing the backlog of orders.

On Monday morning, the backlog was still occupying the clerk's full attention, when a further fault in the power supply was found. The electrician was duly summoned and, without so much as a by-your-leave, threw the switch.

Bells, sirens, and the cries of panicking managers filled the air. The electrician quickly threw the switch again, hoping that no one would notice. The clerk was discovered sobbing quietly over his key-board, having just lost the last screenshot of orders.

Moral: First, don't let rustic electricians, to whom the difference between 240 and 250 volts is the amount of brightness coming out of the bulbs, and on is the opposite of off, with none of those confusing grey areas in between, loose on vital pieces of equipment.

Second, at least one person at the remote location should know what to do if the system crashes. On this occasion, the site engineer was 160 miles away on a job in Glasgow, and was unable to get to the site until Tuesday.

The BT engineer was also out on another job, and the whole restart operation involved about two hours of telephone calls simply to find out what to do. So get yourself some procedures written.

A 'glaring' case for VDU worker-control

FOLLOWING a recent Op Spot report on the health aspects of working with new technology several people have asked me what can be done about improving conditions. As luck would have it, I have received a pamphlet published by the New York Committee for Occupational Safety and Health (NYCOSH), titled "Health Protection for Operators of VDTs/CRTs."

It contains useful advice for those worried by the effect on them of VDU-based office and computer equipment. In the US, the National Institute for Occupational Safety and Health (NIOSH) has started research which may lead to legislation on manufacturing, maintenance and operation standards for VDUs. But NYCOSH maintains that it is the users of VDUs, the people at greatest risk, who have the most important role in protecting both their jobs and their health.

The problems listed by NYCOSH match those cited in the Alfred Marks survey reported on this page two weeks ago: Soreness, redness, stinging, itching, irritation, and general discomfort of the eyes; pains in the neck and back; dull headaches; seeing blurred or double images; dizziness and nausea; and problems with spectacles or contact lenses.

When the eyes are required to focus on close objects, such as VDU screens, the ciliary muscles must compress the lenses. Therefore, long periods spent working in this condition will tire the eyes. As a rule, operators should have a 15-minute break

What is needed is willingness on the part of workers to stick up for their right to a healthful workplace

hourly, or 30 minutes every two hours, to rest their eyes by viewing at greater distances. Two hours should be the absolute maximum for uninterrupted work at a VDU.

This kind of control is only necessary where the working environment is already unsuitable.

Glare can also create eye-strain, coming from windows, shiny work surfaces, large expanses of paperwork, and lighting that is either too harsh or incorrectly placed. The reflections of this light on the screen make it difficult to see the characters displayed.

Some of the methods for reducing glare suggested in the NYCOSH publication are the use of blinds or awnings on windows, sensible positioning of machines and light fittings, the use of indirect lighting, the reduction of overall lighting levels without making it difficult to read printed material, possibly giving the workers themselves control.

Some of the other remedies for eliminating glare include the removal of one fluorescent tube where they are installed in pairs (I used this one myself), and pieces of cardboard fixed above the video screen to keep the light off it.

While these home-made solutions can be surprisingly effective, they do not provide a real alternative to curbing the problem at source, by relocating the equipment or improving the environment.

A stumbling block often encountered in this area is that of management failing to realise the extent of the problem. An example of this affected me directly while I was working as a shift leader on an ICL 1900.

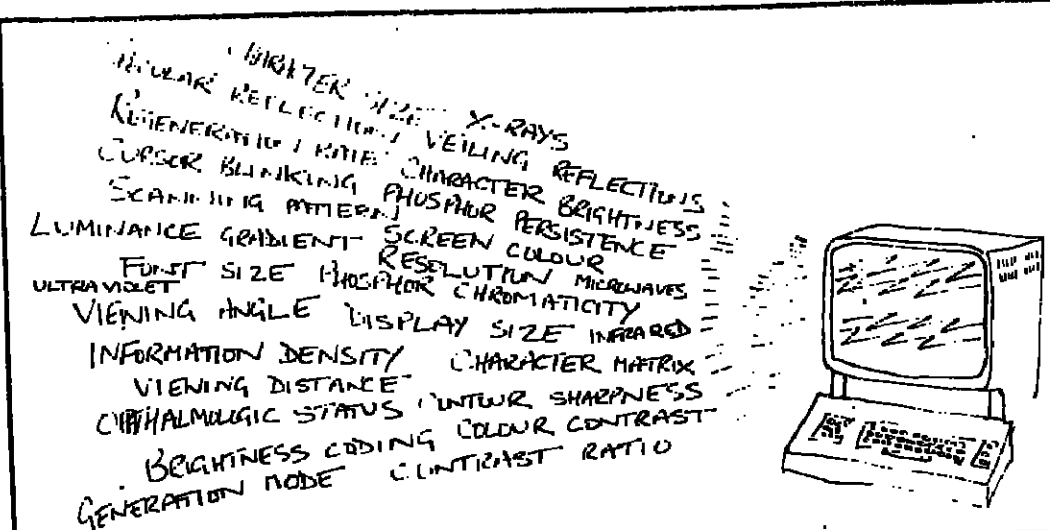
The machine room was too

small to accommodate the hardware upgrade needed to maintain service levels on the online system. So more disc drives were installed, and the operator's console moved to fit them in. ICL 1900s use teletypes as consoles, and these have a transparent perspex cover over the print mechanism.

With the console in its new position, one of the (diffused) overhead lights was reflected directly into the console operator's eyes. If the teletype cover was left open to eliminate the glare, it proved impossible to hear anyone who phoned the machine room to check on progress. The management said that it was impossible to move the console, and did nothing.

The situation continued for another five years until the installation was closed.

If all the operators had protested



as a single body, rather than making the occasional personal complaint, perhaps something would have been done.

Another kind of glare that can cause problems results from the installation of videos with their backs to a window. The background light from the great outdoors is much brighter than the insipid little cathode ray tube, but the pupils of the user's eyes react to the total light entering them, thus making the characters on the screen difficult to see.

Health problems beyond mere eye-strain may be caused by sitting for long periods on poorly designed seats. Varicose veins and even piles can be caused in this

way. Operators should be sure not to sit with the spine curved as a result of badly designed desks and chairs.

The report states, "What is needed is knowledge about equipment design and its health effects, concern on the part of employers, and willingness on the part of workers to stick up for their rights to a healthful workplace and to stick together to get it."

Health Protection for Operators of VDTs/CRTs, The New York Committee for Occupational Safety and Health, \$1 (individuals), \$3 (companies), 32 Union Square, New York, NY 10003.

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Middle East Computing began as a single-issue publication, backing the Gulf Computer Exhibition and Conference at Dubai last December. Its enormous success revealed such an urgent and widespread demand for computer product information that it will be published regularly from April.

6000 copies will be sent to established computer users or key personnel within government and major business organisations in the Middle East countries predominant in the computer market. The circulation was compiled through the full research resources of Computer Weekly and IPC Business Press backed by contacts made at the Gulf Computer Exhibition.

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PERIPHERALS 82 SUPPLIERS EXHIBITION

The Specialist Event for Specialist Computer Purchasers

Peripherals '82 will feature the very latest in terminals, VDUs, printers, plotters, memory products, graphic displays, tape and disc drives — an exhibition for anyone with purchasing responsibility in the computer peripherals field. This professional exhibition — presented by the Peripherals Suppliers Association and Systems International — is the annual opportunity for those requiring computer peripherals to discuss their needs with specialist suppliers.

March 31 — April 2, 1982
10.00 — 17.30 (closing at 16.00 on the last day)
West Centre Hotel, Lillie Road, London SW6

Admission, by business registration, is free of charge. Plan your visit now and save time on arrival by sending for your registration leaflet in advance.

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Post to: The Exhibition Manager, Peripherals '82, IPC Exhibitions Ltd, Surrey House, 1 Throley Way, Sutton, Surrey SM1 4QQ.

MD appointed at Pye Telecommunications

PyE Telecommunications has named James Foord, formerly general manager of ITT's data systems division, as its new managing director. He replaces Michael O'Loughlin, who has joined Fluoride Europe as its European chairman.

Foord's career in the computer industry has spanned 22 years, starting in 1960 at IBM. Six years later he joined Rolls Royce as computer operations manager, eventually taking responsibility for all management services, operational research, computing and systems.

Following a spell as director of marketing support at Honeywell, Foord was appointed managing director of Potter Data Products, the peripheral equipment supplier. Foord, who holds an honours degree in mathematics from the University of London, takes up his post with Pye at the beginning of next month.

MCA elects chairman

THE Management Consultants Association, MCA, has appointed A. T. Kearney's managing director Philip Banks as its chairman. Banks, who is also a vice-president of A. T. Kearney's parent company, is an economics graduate of London University. He started in management consultancy in 1963 with Norcross and Partners, later acquired by Kearney. His career has included the Army and politics - he stood as a Parliamentary candidate for the Conservative Party in the 1974

General Election.

Robin Moore of Atkins Planning has been appointed MCA's vice-chairman. MCA was formed in 1956 and now has 25 member firms.

Richard Champ and Brian Davies have joined Prime Computer as sales executives. Champ will operate in Prime's government district. Davies will work in Prime's special industries group, based at Feltham.

Tony Manning has been appointed field sales director at Semiconductor Specialists (UK). He has been with the company since 1973 serving most recently as national sales manager at the group's headquarters in Chicago, US.

John Goodman, formerly a director of Computer Resale Brokers International has joined Kendal Computer Group as group marketing director. He also becomes managing director at the group's newly-formed subsidiary sales team.



Fastest fingers in the West probably belong to Leila Evans (left) of Greenfield, and Dixon Computer Services who, for the second year running, is Rediffusion's Operator of the Year. She clocked up 27,072 net accurate characters an hour at the finals of the UK Data Entry Competition. The score, which won Evans a cheque for £250, was computed after deducting 100 characters for every error. Runner-up, both from Spectrum Computer Services, were Joyce Pool, who came third and received a radio cassette player and Anita Wolstun-croft, whose prize for second place was a portable colour television. Prizes were presented by Rediffusion's managing director Michael Aldrich.

More support for PPL

PACKAGE Programs has added support staff and sales executives to the team at its recently-formed subsidiary, PPL-MMS.

Ray Jones, formerly a product manager with Olivetti, has joined as client support manager. Client support consultants are Paul Johnson, formerly with Sank Heat Transfer in Birmingham and Ken MacKenzie, who was previously with Rank Xerox.

Gordon Tebbutt and John Rapson have been appointed sales executives. Tebbutt, who will be responsible for sales in North London and the Northern Home Counties, was previously with

PMSL. Rapson's sales area is the City of London. He has spent the last two years with ICL and BSC Computing.



Joining Peripheral Hardware a managing director is John Shenn, former national accounts executive with Cable and Wireless. After working in Canada for eight years, in 1971 he joined Data 100 as a product support engineer and eventually became manager of the company's support and service operation in Switzerland.

BOOKS

No need for mystique in buying computers

Managing with Computers. Terry Rowan. Pan Books, 1982. £2.50 (paperback).

THE cheapness, and therefore popularity of microcomputing has brought forth a proliferation of paperback books advising businessmen on how to choose and install a machine.

This book, however, sets itself the more formidable task of advising on mini-computers and mainframes as well as micros, something impossible to cover adequately in some 300 pages.

Terry Rowan, himself a computer consultant, sets about his subject methodically and logically, but with an apparently pessimistic view of the outcome of computer projects, presumably born of personal experience. He seems to have a low opinion of DP staff in general, depicting them in various sections as being scruffy, unproductive and "rewarded excessively" for what they do.

At the managerial level, he dwells on the lack of understanding between the DP department and the rest of the company, and the managerial inabilities of people who have come from a technical background.

Admittedly, this book is not intended to be read by programmers or DP managers, but I cannot see them recommending it as an unbiased source of information. Feminists also will probably be affronted at much of the content: managers are all assumed to be "he" in the real life examples quoted, and the only woman to appear is a character called Nellie from the accounts department.

On the positive side, Rowan's descriptions of the steps to be taken in setting up a computer system are thorough and he gives a realistic picture of what the average company can expect to gain from it. He takes the view that investment in a computer is no different from buying any other expensive piece of equipment, a fact often overlooked by management bemused by the mystique surrounding it.

Despite a wealth of information and advice on computers, the reader is left with an uneasy feeling that once the illusions have been shattered they may not be such a wonderful thing to have after all. Perhaps a more appropriate title for this book might have been Managing Without Computers.

Maggie McLening

Delving into DBMS

Evaluating Data Base Management System, by Judy M. King, Van Nostrand Reinhold, £18.65. 275 pp.

THIS book is divided into three sections. The first deals with fundamental issues. Does a given organisation need a database, and if so, what is needed? The second section then covers the various aspects of DBMS software architecture, while the final part is devoted to a discussion of the role of database in various user environments.

In the opening chapters, the author describes how to evaluate the need for a database and how to choose an appropriate evaluation team. The factors with which this team should aim to be cognisant include the organisation's data (its origin, flow and significance), its present/future application requirements and how the impact of change should be buffered when a move towards DBMS is initiated. Each of these topics is discussed in considerable depth.

The author goes on to delve

more deeply into the technical aspects of DBMS. Individual chapters are devoted to physical data organisation, data models, data independence, data integration, data integrity and security.

Each topic is covered in sufficient detail to get the message across without over-burdening the reader with too much technical matter, and the treatment is comprehensive and to the point.

The third part of the book covers a number of subjects that are, collectively, most relevant to DBMS users. Two of the more important aspects are cost/benefit analysis and criteria/methodologies to aid the selection of an appropriate system.

There is an interesting chapter on user interfaces to DBMS and the book concludes with a section that discusses possible future trends: distributed processing, distributed data, hardware assists and self-defining data.

Philip Barker

Year Book challenged

Computing Marketplace. Edited by BIS/Pedder Associates Ltd. Gower Publishing Co. Ltd. in association with The Computing Services Association. pp 501. £35.

UNTIL recently, the DP industry has had to rub along with only a bare minimum of reference and trade books.

The Computer User's Year Book diligently produces an annual comprehensive listing of all computing matters and The International Software Directory, an increasingly valuable guide to ready-made application packages.

Challengers, however, are now emerging, if not exactly thick, at least fast, to plug potential gaps in the installation bookcase.

Dr Adrian Stokes of St Thomas's Hospital has recently produced a diagnostic guide, The Concise Encyclopedia of Computer Technology, which no management report writer can afford to be without. Meanwhile, about to zap into the book lists is a much needed User's Guide to Communications Equipment.

In the meantime, a new publication, Computer Marketplace, has been introduced, backed by such weighty bodies as BIS/Pedder and the CSA.

As the first time reader will quickly discover, the book concentrates on the companies which provide services, rather than the services themselves. As a result,

discovering the local supplier of Apples or Pcs is not as speedy as it would be from a listing of products.

But the publishers have thoughtfully provided instructions on how to use the book which certainly speeds information retrieval. The directory is divided up into ten major sections, most with accompanying features, covering such areas as bureaux, consultants, training, recruitment, finance and maintenance.

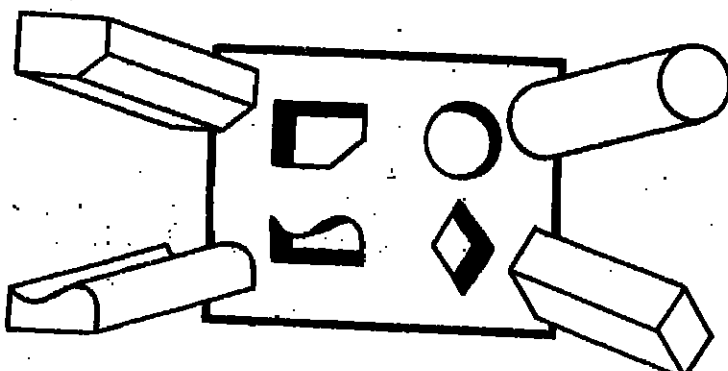
Products and services apart, the book does yield some interesting data. The troubled CAP-CPE Group, for instance, still employs 1,000 people, a total almost equalled by the bustling Data Logic and IF International.

Similarly strong is Securicor, listed as having 23,000 professional staff involved in computer service group "xxx". Speedy research establishes that Brand "X" relates to Miscellaneous Computer Related Services - IBM, with its 15,000 UK listing, had better watch out.

Provided the reader can master the basic sort mode needed to get the full benefit from the book, Computer Marketplace certainly deserves its place on the installation reference shelves. It will be of considerable benefit and interest to both established and new entrants to the computer market scene.

Alan Simpson

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SOFTWARE

MONTH

Claire Gooding identifies the demand for greater productivity as the driving force behind software development

The current that is taking the industry to maturity

ANYONE in the software business — and quite a few outside it — recognises that developments in software cannot be summed up in a few pages.

However, one theme has emerged strongly: the need for increased productivity.

Programmers and big DP departments being such an introverted lot in general, this is usually taken to mean programmer productivity — getting more code per programmer, more omph per program.

This is all very well, and the trend towards buying packages rather than tailored systems, writing re-usable modules, and using program-writing aids is all that it should be.

But beneath the issues that have hit the headlines there has been a slower, stronger current taking the software industry towards maturity. The advent of

the microcomputer as everyone's tool has meant that there is a new, more demanding race of user whose presumption that software can (a) do almost any job, and (b) can do it properly, has begun to rub off on the more docile end-users of yesterday.

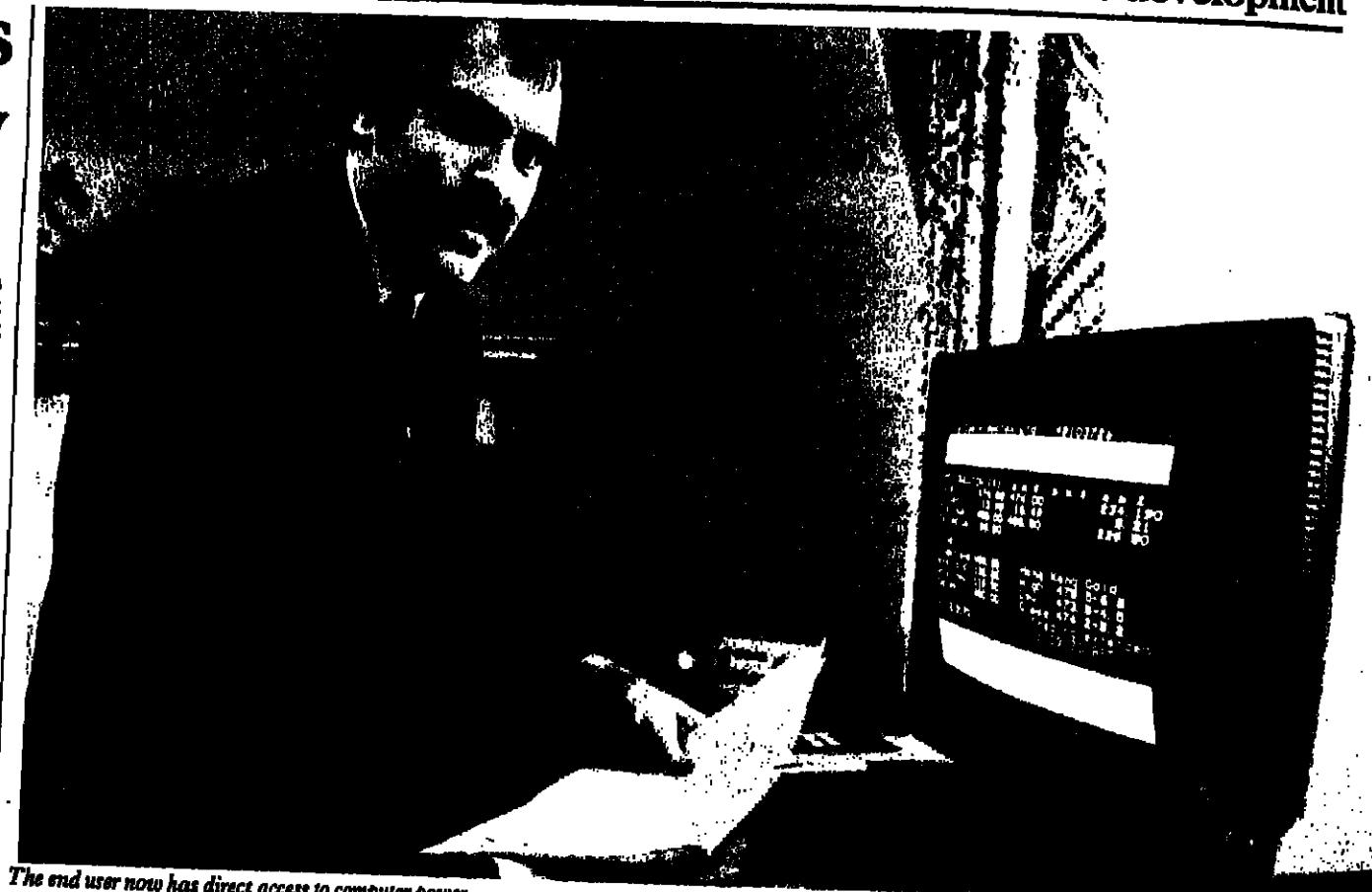
End users who would once put up with a six-month queue to get their application written now expect to be given other means — a terminal on the desk, high level query language, or a report writer.

DP departments have tended to forget that they are not an end in themselves, and the habit of many is to dissociate themselves from the actual product of their company, be it biscuits or motor engines.

So the power of computers, which could do so much to improve the way biscuits and motor engines are produced, has been directed mostly towards the non-profit-making parts of companies, mainly the accounting, stocktaking, and "housekeeping".

Consequently the hands-on revolution has surfaced in microcomputing, leading to UDI departmental decisions, and a whole new range of home-grown applications written with the attitude that they must be easy to use. The same ideals have, now taken a firm hold in the main-frame market.

This trend towards easy-to-use tools means that everyone has the chance to get in on the computer act, be it financial modelling or sorting out dental records.



The end user now has direct access to computer power.

Computer power is on the move — to the end user

OVER the past decade there has been an almost continuous wall from data processing departments about their inability to recruit enough skilled staff to develop new systems and maintain old ones.

Of late, that chorus has been more muted, partly because of the harsh economic climate. But the start of a fundamental shift in responsibility for data processing from the central department to the end user should also be taken into account.

Last year, some £45 million worth of personal computer hardware was sold in this country, the vast majority to those white collar workers who would in the past have depended on experts to do their computing.

The process of distributing computer power has taken place because the economics of silicon engineering have been reducing hardware prices at a steady 25% a year, and because only when computing power can be put into the hands of the end user can real gains in productivity take place.

Management information systems were one of the outstanding failures of the early Seventies. The idea was fine: give the end user — that is the manager — all the reports, analyses and statistics that he needs and he cannot help but become more effective, more productive. In practice it did not work. Trolley loads of indecipherable computer print-out gathered dust in the corners of offices.

What had gone wrong was that the data processing department was in charge. It was the computer experts who told the manager what he could have, and not knowing any better he went along with them. Now with cleaner hardware and the end user at the console who are going to have another stab at it.

The difference is that this time software is going to play a crucial part in the scheme of things and systems will have to prove that they can justify the money spent on them.

There is still some way to go. At the British launch of the Apple III microcomputer last autumn, one company executive said that a novice needed at least 20 hours of instruction before he could get something useful from the machine. By the end of the decade that learning time would be reduced to 20 minutes, he said.

Productivity, as Ray Buckton and Sir Peter Parker know, is a tricky question. But there can be little doubt that in the office, particularly, savings can be made. Figures produced by the Civil Service last year show that it costs £3.28 to type a letter in Central London.

Sending that letter between two addresses in the capital adds another £3 to costs. In all, the average London executive consumes well over £1,500 worth of fillings, photocopying, and clerical resources each year.

Since the war, office productivity has severely increased. Most of the automation that has been in use — typewriters, telephones and so on — relies on 100-year-old technologies. Computing has barely begun to scratch the surface. As one director put it recently, 99% of computing is directed towards solving accounting problems.

Word processing software has already shown that paper can be produced more quickly, but according to Dennis Jarrett, in his book *The Electronic Office*, "the real pay-offs in office automation will be in improving the timeliness and the quality of management decisions. The clerical functions are

there solely to support management and the decision taking process."

That is why word processing is seen by many people as the stepping-stone towards a terminal capable of handling a wide range of office functions. Although the software to handle these functions is still in its infancy, products for planning and modelling applications — essentially mathematical problems — have begun to make their mark.

There are now over 20 different companies selling versions of Pert, software designed for critical path analysis and first used by the US Navy to oversee the Polaris nuclear missile programme.

Pert trimmed two years off the time it took to complete the project. Like most modelling programs, Pert (it stands for Project Evaluation and Review Technique) takes the user through two stages. First he specifies the dependencies and constraints of the model and then he enters the data from which a network is drawn. The network is an outline of the way the project will proceed.

Microcomputer versions of Pert are now available for £200 — Codified Computer Systems, for example, sells a package at this price. Computerline of Weybridge, Surrey, has a more sophisticated version of Pert called Micropert. At £1,750 for a four-module package, Micropert will run on the TRS-80, Rair Black Box, Superbrain and Comemco systems.

Although the construction industry (where projects tend to be complicated and time critical) is the classic user of critical path analysis, virtually any activity that involves a large number of operations carried in the right sequence can make use of Pert. Applications

making their way on to small machines at a rate of knots.

Spurred on by the success of Visicalc — conservative estimates put sales of the product at over 100,000 in three years — the market is crammed with "calc" packages. Comshare has even brought out a small machine package that can work in tandem with its main-frame bureau computers.

The success of financial planning software illustrates the need to produce software for well-defined applications. Program generators are another example of this requirement. The interest in program generators sparked off by publicity surrounding DJ "AI" Systems' *The Last One* is immense.

Although it seems unlikely that the novice will be able to write his own code with it having some knowledge of business analysis and high-level languages, for some time yet, the generators promise to increase systems house productivity greatly.

New software requirement

range from planning a factory to launching a new project.

Financial planning systems, particularly when applied to the budgeting process, are another example of the new type of management information system. Setting budgets by hand for an operation of any size normally only leaves time for about one-and-a-half attempts at getting it right. Computerised planning can increase the number of trial budgets to five.

Operating a financial planning system usually involves specifying some logic, for example that price times sales equals turnover, and inputting base data that is multiplied to fill a matrix plotting variables against time.

The great advantage of computerised financial planning is that elements of the model can be changed and the entire budget recomputed. The so-called "What If" questioning.

Financial planning systems allow organisations to hone their budgets through a process of interaction between the managers actually responsible for achieving the targets, and those at the top who have wider objectives.

Originally not much more than expensive time sharing products, financial planning systems are now

grammer which will produce sub-routines, handle data from five files at a time and, according to its UK distributor Pearl International (UK), does not require any knowledge of the C-Basic or M-Basic languages in which it codes.

"No code appears on the screen," says Pearl's director Tony Frowd. "All the user has to do is learn how to become a systems analyst."

Pearl International, an offshoot of a dentistry practice run by computer buff Chris Hibbert, claims that a sales ledger to handle dealer invoicing, return of products, analysis of which dealer sold what and pro forma invoices took about two and a half hours to put together using Personal Programmer.

When Personal Programmer is launched in the UK in April, Pearl International expects it to appeal to the end user rather than the systems house looking to improve on programming time.

One of the key technologies in bringing computer power into the hands of users, particularly in large-scale service operations, will be viewdata. Although Prestel has been slow in getting off the ground, British Telecom has shown the computer industry how to put £700 terminals on someone's desk and allow that terminal to communicate simply with a central host.

Prestel's problems, basically its lack of appeal to the domestic user, spring from the original concept of the technology as a means of dishing out information that people had previously got from books, guides and brochures. More alert business men have grasped that viewdata is best used for transactional processes.

That is why BL, which plans to equip 1,700 dealers with Philips' terminals by the end of the year, is expanding viewdata to allow dealers both to inspect stock records so that they can trace the whereabouts of particular models, and to deal directly with the company. They will be able to place orders over the system.

Viewdata makes it possible for a car dealer wishing to arrange hire purchase for a customer to key in the customer's particulars, get credit clearance and a hard copy of the information.

The thrust of viewdata software has been to make the end user's task more easy. Some systems reformat data from ordinary computer files on the fly, turning a conventional database into a viewdata look-alike.

GEC has a widget called Selective Field Update on its bureau service, which automatically moves the cursor to the appropriate place on the screen for the user to make an entry. Security locks and improved methods of searching a viewdata database —

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For example, US-based Relational Systems has produced a £180 package called Personal Pro-

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keyboard search instead of the Prestel branching tree approach — have also been devised by the private systems suppliers.

But without doubt, one of the biggest advances in viewdata has been brought about by British Telecom's decision to introduce Gateway — the ability to connect private computers into the Prestel network. This opens the way for transaction processing by the domestic user. In future he will be able to book his holiday direct, manipulate his bank account and so on.

Most of the end user applications discussed so far have involved processing business information. But following Japan's announcement of its Fifth Generation Computer project, there has been renewed interest in the 20-year-old art of artificial intelligence and its use in expert or knowledge systems.

This month saw the launch of the first general purpose commercial expert system, Sage. Its designer, SPL, will be selling a £2,000 micro version.

Expert systems like SPL's are akin to modelling programs, in that they involve the specification of rules by an expert (in the com-

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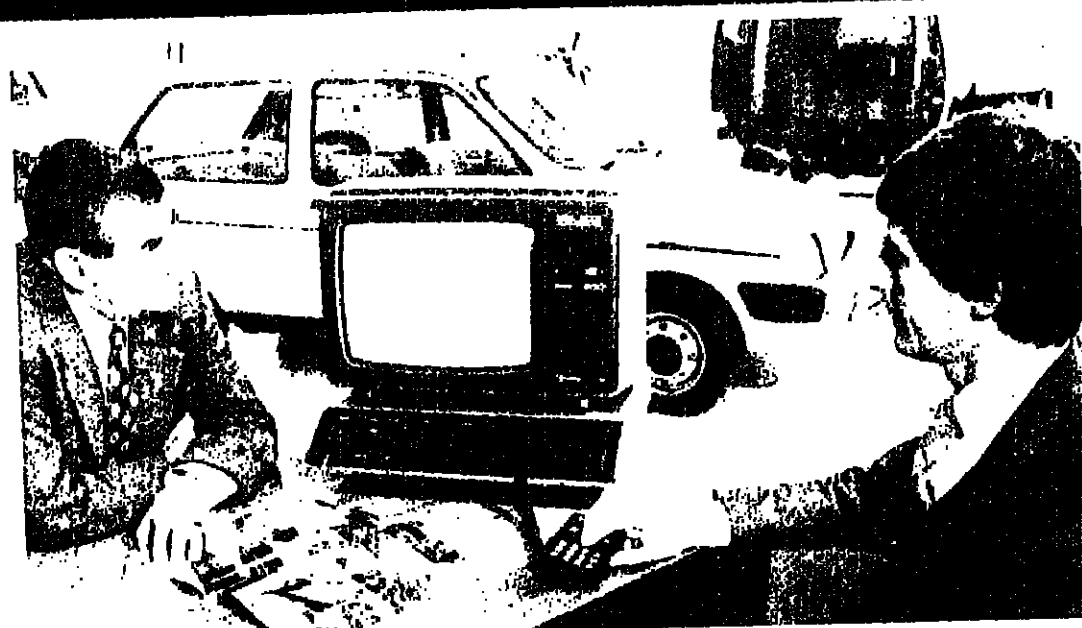
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BL's Stock Locator in use at a distributor's showroom allows dealers to place orders over the system.

pany of a so-called domain engineer) and the interpretation of those rules by the system, for the benefit of another expert user.

Alex d'Agapeyeff, chairman of the British Computer Society's expert systems committee, is convinced that expert systems can be applied in the commercial world. He believes that the systems could be harnessed to the

task of updating accounts ledgers in line with legislation or changing company practices.

"There is a danger," he said, "that expert systems will be seen as only useful for profound things. They could be applied to making a universal product. There are a large number of file processing products, all are different. Accounts files could be made more

like ledgers. Some of the side-effects of artificial intelligence do ring a lot of bells on where software is already going."

The management information system of the future may well include the expertise of past managers, immortalised in the rules applied by an expert system, improving the "quality and timeliness of management decisions".

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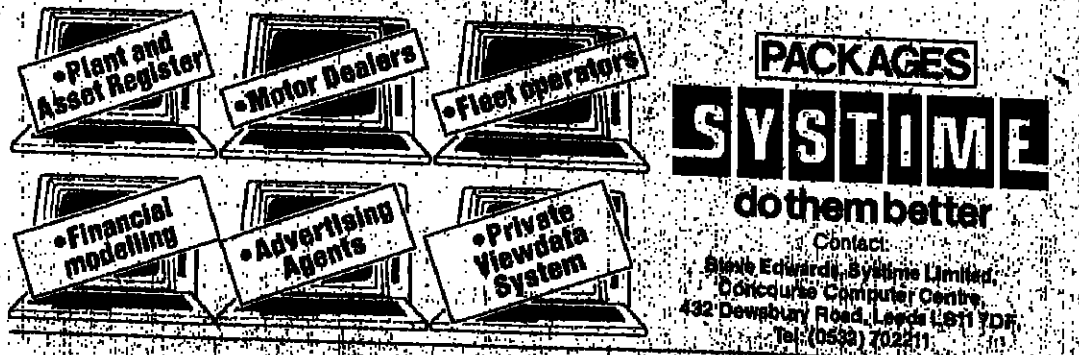
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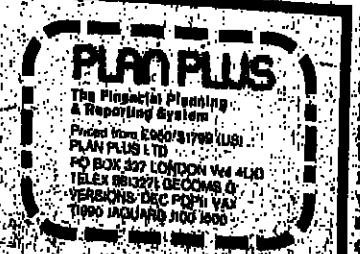


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Word processing software has already shown that paper can be produced more quickly, but according to Dennis Jarrett, in his book *The Electronic Office*, "the real pay-offs in office automation will be in improving the timeliness and the quality of management decisions. The clerical functions are



D'AGAPEYEFF Expert systems can be applied in the commercial world.

Real time industry gets the message

by Claire Gooding
REAL time software has been one of the most neglected areas of computing, fated to rest in the hands of a small circle, partly because the commercial world is so keen on general ledger and the like that it has not woken up to the potential in real time applications.

In this field quality, reliability, and the "man-machine" interface which gives users the ultimate control, are more essential than in any other — because the user can be in charge of a nuclear power station or a moving ship, for example.

The real time industry faces productivity problems as well, because the ends to which it turns its skills are varied and highly specialised.

A recent report from the National Economic Development Office criticised the lack of co-operation in the British real time software industry.

Given more high-level tools, which would prevent the re-inven-

tion of the wheel on every project, the industry would be far more efficient.

There are now signs that the message has been taken to heart.

Systems houses such as SPL and CAP are putting their heads together over real time projects, particularly with the US Department of Defence's new language Ada.

The most positive move towards making real time systems more productive and less labour-intensive has come from Dynamic Software Services, the Hawker-Siddeley subsidiary.

For some time the company has been seeking to use and supply "re-usable" modules of real time software as part of its service.

This technique cuts down on the amount of code for applications like graphics, which have often needed some particular slant for a specific project.

It also allows DSS to spend more time making its software easy to use for end users, who might be anything from sailors to mining



BANCROFT... concentrating on the man-machine interface.

engineers. "We think it's important to concentrate on the man-machine interface," said DSS Divisional Manager John Bancroft.

"The packaged approach makes as much sense in this business as it does in conventional DP, and the trend towards giving power to end users is just the same."

The micro spectre — ushered in with a modest whimper

A SPECTRE is haunting today's DP manager: the spectre of microcomputers.

It is clear that micros will be used in a big way to perform tasks traditionally serviced by multi-million pound mainframes — and equally clear that at the moment this is all talk and little is actually being done.

How is it, then, that micros will be ushered into the DP world? The contention of this piece is that they will make their entry with the

SOFTSELL

modest whimper of dumb terminal emulation rather than the glamorous bang of a sophisticated local area network, with \$300 software packages the cause of it all.

In regard to micros, there are

powerful and coherent reasons for DP conservatism. Although the hardware is often sufficiently powerful, the software available usually isn't, and timely support is generally non-existent.

However, reflection on what is happening today suggests that ordinary DP departments will have micros forced upon them whether they like it or not: independently of whether they feel they understand the technology or are ready to use it.

For the average DP department to espouse micros, two things must first take place. Initially, knowledge of what they do and how they work has to become available within the DP department itself. DPs need to feel familiar with micros, in other words.

Secondly, a track record of successful micro implementations needs to be established by pioneering DP departments, from whose experience the DP world in general can benefit without running unacceptably high business risks.

How will all this take place? To answer it is necessary to understand how personal computers are being used today in corporations.

Corporate non-DP staff are buying personal computers for a small number of simple, standalone applications. In particular, middle managers are buying micros because they want to run electronic spread sheet programs such as Visicalc, or word processing programs such as Wordstar. The most frequent users of the former are marketing and financial staff, for sales and financial projections and reports.

Word processing is used in a variety of departments, and the primary justification typically lies in the development of documents over a period, or for personalised mass-mailings.

In short, corporate staff are buying micros because they want to run a single, specific program costing a few hundred pounds.

The cost justification of the hardware/software combination is usually easy, and since the expenditure generally falls within the



Ferris is a consultant in the UK and US providing marketing and planning advice to computer users, particularly in the area of software.

manager's discretionary budget, there is no difficulty in purchasing from a local personal computer retailer.

Clearly, at this stage DP participation is not necessary, and system acquisition and implementation normally takes place entirely without their involvement.

Once the system has been in operation for some time, two things tend to happen which will, believe, be the main causes of acceptance of micros by DP staff. First, personal computer users want to use their machines as dumb terminals; and second, they ask for programming help.

The Dumb Terminal Syndrome. One of the first things that corporate users of personal computers want to do is to access the corporate database, and the portfolio of applications programs that have been developed over the years by DP staff.

For example, a bank vice-president who has been using Visicalc to predict his next year's loan business will find, once he has become familiar with his system's capabilities, that he would like to be able to access actual client records in test various hunches and hypotheses. Currently, if he wants to do this he probably has to go to some distant, crowded room where there are various mainframe terminals.

So the personal computer user turns to his DP department, and asks to be able to connect his machine directly to the mainframe. This is where DP department have to get involved.

Most micros are quite capable of emulating common terminals, such as the IBM 3270, or simple

Micros in the DP world

asynchronous TTYs, and supporting packages are readily available. DP has to install the emulation software in the micro, and at the mainframe end it has to assign log-on privileges and define the TP environment (such as available programs and menus, data access, and so on).

Physical connection must also take place, whether by dial-up modems, leased lines, or direct wiring.

True, often DP departments will be able to resist such user demands, often with valid excuses. However, the facts are that this very simple form of networking presents no real technical problems, and DPs claiming that it does are seriously endangering their credibility. Further, word will get around that it can be done, and sometimes senior management will make the requests: these users cannot be turned away so easily.

One way and another, a lot of non-DP personal computer users are going to have their systems connected as dumb terminals to the corporate mainframe, and DP is going to have to do the work.

The Lend-Me-A-Programmer

Syndrome. The other main cause of micro acceptance among DP staff will come, I believe, from requests for programming assistance. Again, senior managers using personal computers are key: they will have a strong tendency to

A lot of personal computer users will want their systems connected to the corporate mainframe, and DP will have to do the work

ask DP to "lend me a programmer for a few days" to implement some extra facility. When the request comes from senior management, it will often be impractical not to respond.

Some of the features implemented in this way will not have any bearing on the general DP en-

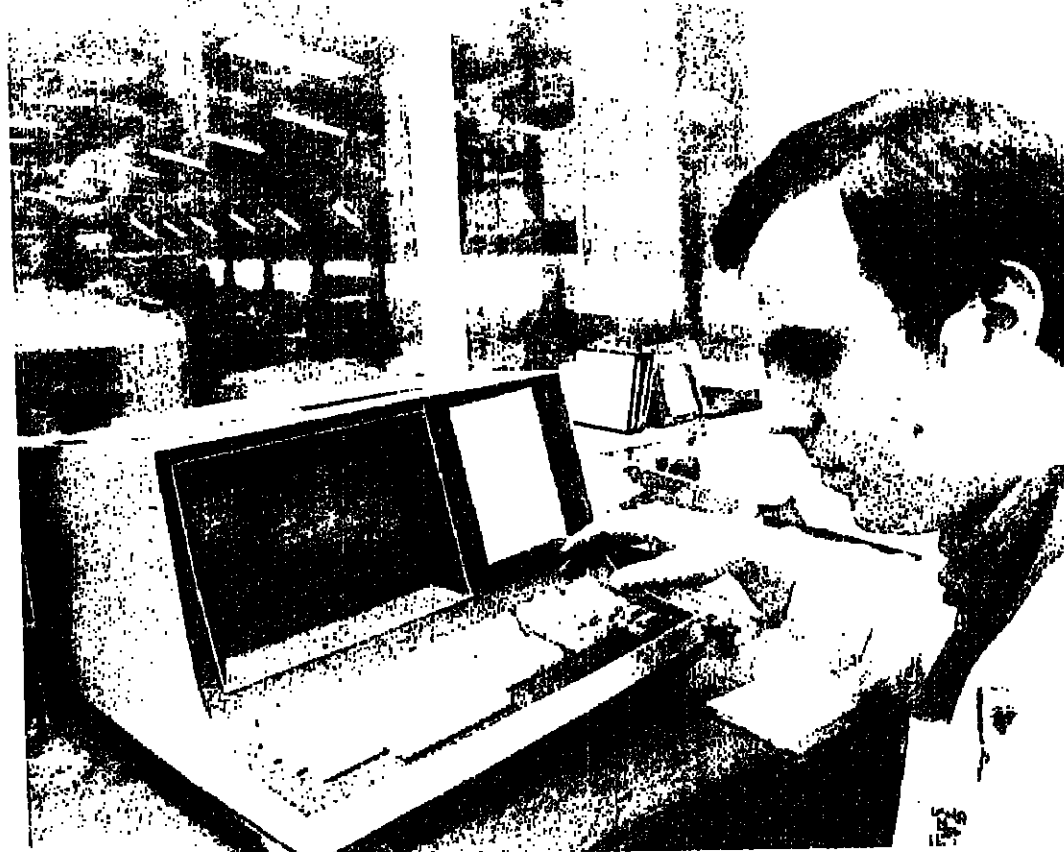
vironment — for example, if the personal computer user wants to know how to make one of his standalone packages do some statistical analysis, or how to change a report heading. But some of the requests will provide the drive for more sophisticated forms of micro networking over and above the dumb terminal working.

For example, users will want to download corporate data for later use locally in spread sheet analysis, or to save having to enter customer names and address for a mass-mailing. Gradually, user requests will encourage increasingly knowledgeable and confident DPs to take advantage of the new technology in more and more sophisticated ways.

Thus the news for the DP world appears to be both good and bad.

The bad news is that insistent users are going to thrust new, unproven technology upon them whether they like it or not.

The good news is that change is likely to be evolutionary rather than revolutionary, starting with simple terminal emulation rather than unfamiliar and relatively complex local area networks.



David Ferris More non-DP staff are using personal computers to run specific programs.

ROUND UP

RECENT events in the software industry you may have missed:

■ The real time software industry, one of the areas in which Britain likes to think highly of itself, was given a warning that it should pull itself together in a critical report from the National Economic Development Office. The report found fault with the "enormous fragmentation of effort" in the UK real time industry, and recommended strict adherence to standards and the development of reusable high-level software tools.

■ Microcomputer giant Commodore Business Machines plans to release a machine which will run existing software and applications originally written for other machines. The plug-in circuitry will be supported by the new Commodore 64, which, priced at \$1,000 could trigger off a price war as hardware profitability is trimmed further back to compete.

■ The much-discussed programmer shortage seems to be easing, with a report from Reward Regional Surveys confirming the trend. The report indicates that pay increases for programmers

have dropped from 6% to 2% over the last six months, with similar, though not so sharp, reductions in salaries for analysts.

■ Software products house Micro Focus launched two debugging tools which will allow users to see their Cobol programs, new and old, come to life before their eyes. The Animator and Slideshow both concentrate on the interactive aspect of Micro Focus' Compact Interactive Standard CIS Cobol compiler. Slideshow allows users to create end user interfaces such as graphs and menus from existing or new applications, and Animator is a "live" trace debugger which follows the code down the screen as it executes.

■ IBM users had the chance to save on present maintenance costs by 25% when IBM changed the way it licenses its software products. The change means that most large users with multiple sites will be able to centralise, getting one copy of updates and distributing it within the organisation, rather than duplicating effort and costs by having changes implemented by IBM at every site.

SOFTWARE MONTH

COMPUTER WEEKLY'S SOFTWARE SUPPLEMENT

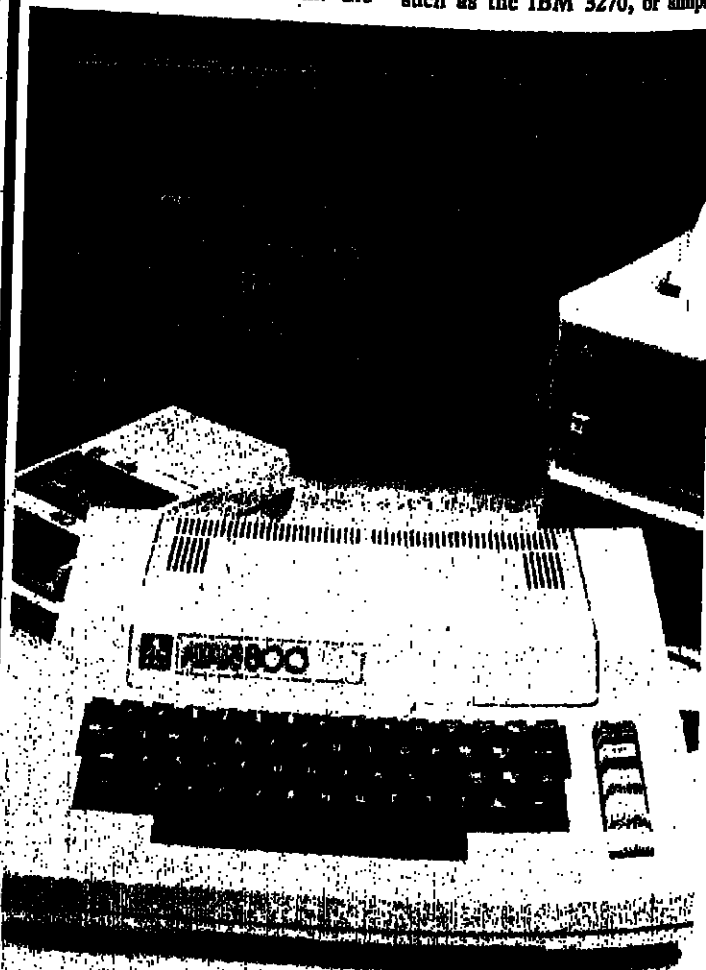
Computer Weekly was the first general computer journal to give software its own space when Software File was introduced for weekly news reports. Now the time has come to expand the coverage further.

Edited by our Software Editor Claire Gooding, Software Month will devote its whole coverage to one subject each month. The topics are listed below.

But included each month will be a news round-up, and highlighting important events of the past month, and a column by consultant David Ferris on the increasingly important business side of software and the companies which market it.

PROGRAMME FOR 1982

- February 26: Annual software review
 - March 18: Networking software
 - April 22: Database
 - May 13: Financial and project planning
 - June 10: DEC systems
 - July 16: Payroll packages
 - August 12: Integrated Office software
 - September 9: Program productivity — program generators and high-level languages
 - October 7: Word processing
 - November 4: City software
 - December 2: CAD/CAM and scientific software
- For advertising within Software Month contact Gordon Bradley, 01-467 3126.



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Word and data processor combined

A COMBINED word processor and data processing system is now available from Hull-based Alveronic Computer Systems.

The system is based on the DEC PDP-8 commercial minicomputer and can provide word processor functions and sales/purchase/invoicing ledger, invoicing/stock control and payroll programs.

It costs from £9,300 including a letter-quality printer, 20 diskettes and 12 months' maintenance. A comparable DEC word processor system would cost about £7,000 with no data processing capability and with installation and maintenance at additional cost, says Alveronic.

For smaller firms, the significant computing power contained in many of today's word processing systems will never be fully stretched, wasting both money and a potentially useful tool. By combining the functions of word processor and data processing



Alveronic's DECmate 278, a combined word and data processing system.

system on the same intelligent hardware, a much more cost-effective solution becomes available, according to the company.

About 100 systems have already been installed by Alveronic.

A variety of system configurations are available, all based on DEC word processor packages. The Alveronic DECmate 278 com-

mercial system is a text processing device using a menu-driven editor to create and update documents stored on floppy diskette.

Up to 200 documents of various lengths or up to 125 pages (at about 2,000 characters per page) can be stored on a single floppy diskette. Simultaneous editing and printing capabilities allow a user to

prepare and edit reports through several drafts.

For larger or more demanding applications, Alveronic can supply the DEC type-300 system, layered on the DEC CTS-300 operating system.

Alveronic Computer Systems (CW), Ryde Avenue, Hull, North Humberside. Tel: (0482) 445461.

Hytec adds to ICL compatible range

OXFORD-based Hytec Microsystems has introduced two more products in its range of ICL compatible systems - the H5000 hard disc subsystem and the Hytec CO3 communications protocol. Both are designed to upgrade the capabilities of the existing product range.

The H5000 is for use with Hytec's H4000 or H4500 terminals. Both terminals are used with ICL mainframes as interactive workstations and can operate as standalone units. The H5000 is CPM compatible and contains up to 20 Mbytes of storage.

The H5000 functions as a local data collection device for use with either of the two terminals when being used as standalone units, or a remote data collection device when either terminal is used as an interactive workstation with the mainframe.

The bus interface provides 200,000 characters per second data

transfer, offering a transfer rate 20 times faster than that achieved when using floppy discs, says Hytec. This enables the H5000 to be shared by up to four H4000/H4500s or a mixture of the two disc units can be shared by up to 16 terminals to provide extensive online storage.

The Hytec CO3 - or full extended basic mode - can function in exactly the same way as its ICL counterpart, claims Hytec. The three most widely used communications protocols are in its mode (CO1), extended basic mode (CO2) and full extended basic mode (CO3).

Although the Hytec CO3 Communications Protocol has the same capabilities as its ICL counterpart, its advantages in terms of price and flexibility lie with its use on one of the Hytec terminals.

Hytec Microsystems (CW), West Way, Oxford OX2 0P. Tel: (0865) 726445.

Analogic extends its array processors

FOLLOWING the launch of the AP400 and AP490 array processors, Analogic has introduced two new data acquisition modules to extend the processors' scope.

The ADC410-02 and 06 provide interfaces to a range of analogue transducers. They are independent of the host computer and relieve the host of acquisition tasks, allowing it to perform other operations while the data is being gathered. Applications include spectrum analysis, audio and sonar signal processing, seismic and vibration signal processing and in various telecommunications contexts.

The 02 module multiplexes up to eight differential input channels. The signal is sampled at up to 115 kHz and converted to 12-bit digital form.

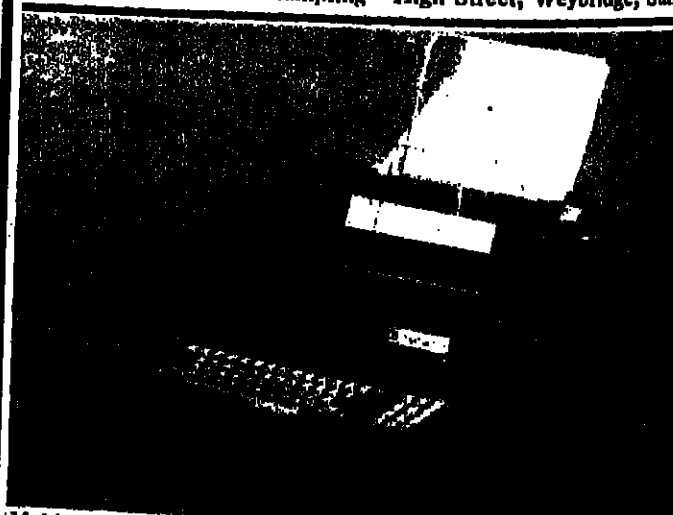
Channel selection and sampling

rate are controlled by software in the processors themselves. A ramp test signal is provided which enables the diagnostic programs - supplied with the unit - to check the module independently of the sensor equipment.

The 06 module can sample two channels simultaneously at up to 50 kHz per channel and convert each channel to digital form with resolution of 16 bits. The interface to the processor and the control channel selection and sampling rate are exactly the same as with the 02 module. A ramp test signal is also provided, as are the necessary diagnostic programs.

Both modules are mounted in 19-inch racks with self-contained power supplies.

Analogic (CW), The Centre, 48 High Street, Weybridge, Surrey.



Multiwriter IV daisywheel printing terminal

Printer with WP functions

A 50cps daisywheel printing terminal, the Multiwriter IV, which combines printing with word processing functions is available from Teleprinter Equipment.

Proportional spacing, centering, right margin justification, bold printing, shadow printing, underlining and page titles are among its word processing functions.

As well as taking some of the load off the CPU, many of these "terminal programmable" features can be switched on and off by the

operator without affecting any CPU software embedded commands says Teleprinter Equipment.

The keyboard features a standard qwerty layout and numeric keypad. A series of LEDs located along the top of the keyboard indicates the terminal's status.

The unit is supplied with a serial RS232C interface. Teleprinter Equipment (CW), Akeman Street, Tring, Herts HP23 6AJ. Tel: (044282) 55519.

ABS minis are 50% smaller

THE MX Series, ABS Computers' commercial minicomputer range, has been repackaged to allow for a 50% reduction in space.

The MX Series is a commercial system, designed primarily for business applications, and with the cost of office space at a premium in the major conglomerates, the reduction in physical size is seen to

be an advantage by ABS. The machine will take up less space than a typist's desk and so can fit unobtrusively in a corner of the office.

The reduction in size is pertinent throughout the MX Series. ABS Computers (CW), Multibus House, Station Approach, Woking, Surrey.

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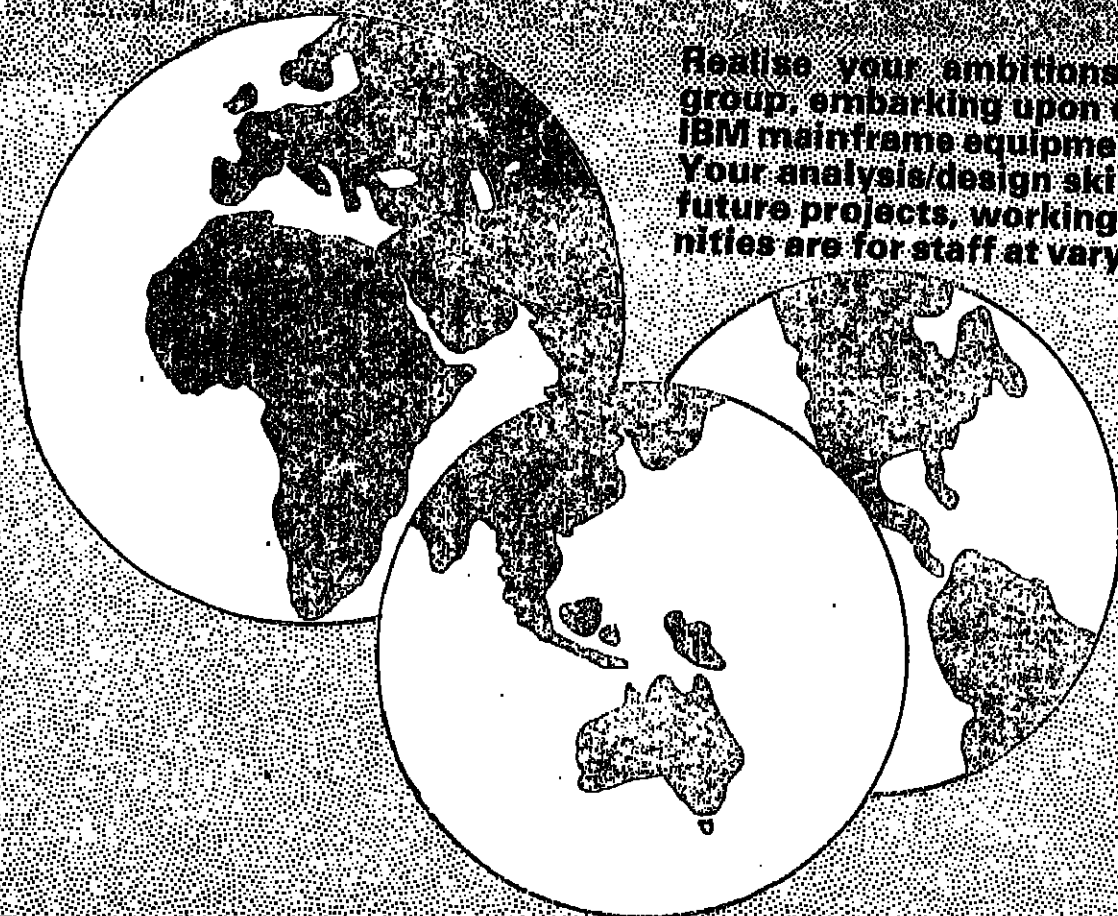
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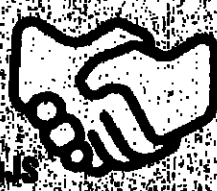
To complement the Tandem sales force they are seeking to recruit a number of young, dynamic systems engineers to take full advantage of their growth rate and standing within the market.

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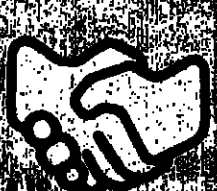
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Previous contact with the freight forwarding industry would be an advantage.

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In order to support a broad customer base, our Client now requires two additional Customer Service Engineers to support and service a wide range of Computer Graphics systems.

The Ideal Candidates will have a good electronics background and a number of years experience of working to component level on Graphics systems. Previous experience of interfacing with DEC hardware and a mix of both analogue and digital experience would be advantageous.

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Initial interviews will be carried out at your nearest SCR regional office during early March.

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The Senior Analyst Programmers and Analyst Programmers we seek must have a sound IBM background with either COBOL or PL/I plus at least one of: Mark IV, APL or ADF and experience of either MVS, TSO/SPF or IMS DB/DC. Project Leaders must

be able to demonstrate, additionally, good management skills and a record of successful implementation of major projects. You must be an ambitious self-starter, under 32, able to communicate at all levels and take decisions. Determined and enthusiastic, you will be the kind of person who is committed to progressing to the highest levels of business management. The rewards of joining Esso are excellent. We offer highly attractive salaries which are reviewed regularly. In addition, you will enjoy a full range of valuable fringe benefits, and of course, considerable scope for rapid career progression within our diverse organisation. Relocation expenses will be met where appropriate.

So if you are a talented commercial systems professional, bring your experience and your ambitions to Esso. Come and talk to us over a bite to eat and a drink at any one of our open evenings in London.

CALL IN FOR AN INFORMAL DISCUSSION

A team of Esso Managers will be at:

THE ROYAL WESTMINSTER HOTEL
(49 Buckingham Palace Road, Victoria)
on Monday 1st and Tuesday 2nd March
between 5 p.m. - 9 p.m.

THE TOWER HOTEL
(St. Katharine's Way, Nr. Tower Bridge)
on Wednesday 3rd and Thursday 4th March
between 5 p.m. - 9 p.m.

THE HOTEL INTERCONTINENTAL
(1 Hamilton Place, Hyde Park Corner)
on Tuesday 9th March
between 5 p.m. - 9 p.m.

Alternatively telephone us on 01-245 3208 today Thursday 25th February between 9 a.m. and 7.30 p.m., or from tomorrow during normal office hours. If you prefer, write with full details

to Ronnie Johnston, Esso Petroleum Company Limited, Esso House, Victoria Street, London SW1.

IBM/GSD RPG Modelling

London to £10K + car
Experienced System 34 or 38 RPG programmers are required to join a highly successful company marketing a management information and financial modelling package. Marketing orientated people will be particularly suited to these positions as they will be expected to function in a support role with the opportunity to develop client contact skills. Contact Tim Bridges

International Support

Berks. £12K to £14K
An international company with its European support centre in Berkshire has a small team of specialists who are responsible for supporting agents and distributors outside the U.S.A. An additional team member who is experienced in telecommunications software and networking is required to join the team. Attractive micro based product in business and office systems. Contact Terry Harvey

British Bank

C. London c. £8,000
A major British bank with its computer centre in London seeks a bright programmer to join the application development team. 2 or 3 years experience of Assembler programming on a large IBM mainframe is required. Fringe benefits normally associated with a banking organisation can be expected along with a salary review in April. Contact Tim Bridges

Comms. Software

Herts. £8K to £12K
Our client is a world leader in this exciting growth area. Continued expansion of the software group has created vacancies in several teams. You should have sound mini or micro systems programming experience using CORAL, Pascal, Fortran and Assembler gained in O.S. compilers, utilities etc., or real time micro applications experience. Contact Terry Harvey

HONEYWELL Level 6

London to £9,500
A market leader and household name in the motor industry has two exciting openings for their data processing team in SW3. An analyst programmer with 4 years d.p. experience including 2 years in systems analysis and a programmer with 2 years COBOL experience are required. Both posts require a thorough knowledge of Honeywell Level 6 mini-computers. Contact Tim Bridges

Comms. DEC/IBM

Berks. to £14,000
This could be the last job move you ever wish to make. Our client is seeking bright, experienced software engineers. Preferred experience is DEC/RSX11, VAX, IBM binary synchronous comms., protocols and X.25 packet switching. If you come close to this and have the right attitude, unlimited long term career opportunities are yours. Contact Terry Harvey

Commercial Comms.

London/S. Coast £8K-£11K
This highly successful company has several vacancies for programmers and analysts to work at their Level 6/DPS 8 installation. Candidates should be thoroughly conversant with DM IV and COBOL. Attractive salaries and surroundings along with career progression are offered in return for hard work. Analysis with advertising/marketing background are of particular interest to our client. Contact Tim Bridges

DEC Scientific

Beds. £8K to £11K
The working environment, the company and its products all rate A.1. with this client. Experienced RSX11/MacroII programmers will enjoy working on applications and systems for computer controlled analysis and measuring instruments. There are opportunities in special systems and standard product development. A physics degree would be useful. Some international travel. Contact Terry Harvey

Travel Industry

N. Surrey £8K-£10K
A well known travel company is embarking on the development of a new advanced travel booking and accounting system based on IBM S/38. One senior analyst/programmer and two programmers are required to join a small team working on this exciting project. A thorough knowledge of RPG is required. Experience of System 38 is preferable rather than essential. Contact Tim Bridges

UNIX Pascal, 'C'

C. London to £12,000
A company engaged in the development of intelligent interactive graphics plus a range of video related products wishes to recruit several systems specialists. Candidates with UNIX, Pascal, or language 'C' are of special interest. People with DEC/RSX11, RT11/2, CORAL, or Intel 8085/86, Z80 and assembler, could also extend their skills with this client. Contact Terry Harvey

Write, or telephone us during office hours as below.
Any other time call Terry Harvey on: Great Missenden (02406) 4705, Tim Bridges on: The Lee (024 020) 502.
We are always ready to discuss these and many other interesting positions.

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HR

Wang (UK) Ltd some key facts

- Established in 1968 by Wang Laboratories Inc.
- Fastest growing subsidiary of fastest growing information processing company in the world.
- 400+ Personnel in the U.K.
- Offices in: Richmond, London, Birmingham, Stockport, Leeds. Representatives in: South West England, Newcastle, Scotland, and Northern Ireland.
- Fiscal Year '81 record results:
Worldwide \$1 billion orders
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UK £25.9 million orders
£21 million revenues
- Product Range:
Wangwriter and Shared Logic
Word Processing Systems. Multi-function Office Information Systems (OIS) and Office Automation Systems (Alliance). Stand-alone and Multi-screen small Business Computer Systems.
The range of powerful 16 and 32 Bit VS Computer Systems. WangNet Broadband Communications Networking System.
- Wang Laboratories Inc. - Over 300 offices in 78 countries 16 wholly owned subsidiaries and 63 distributor companies worldwide.

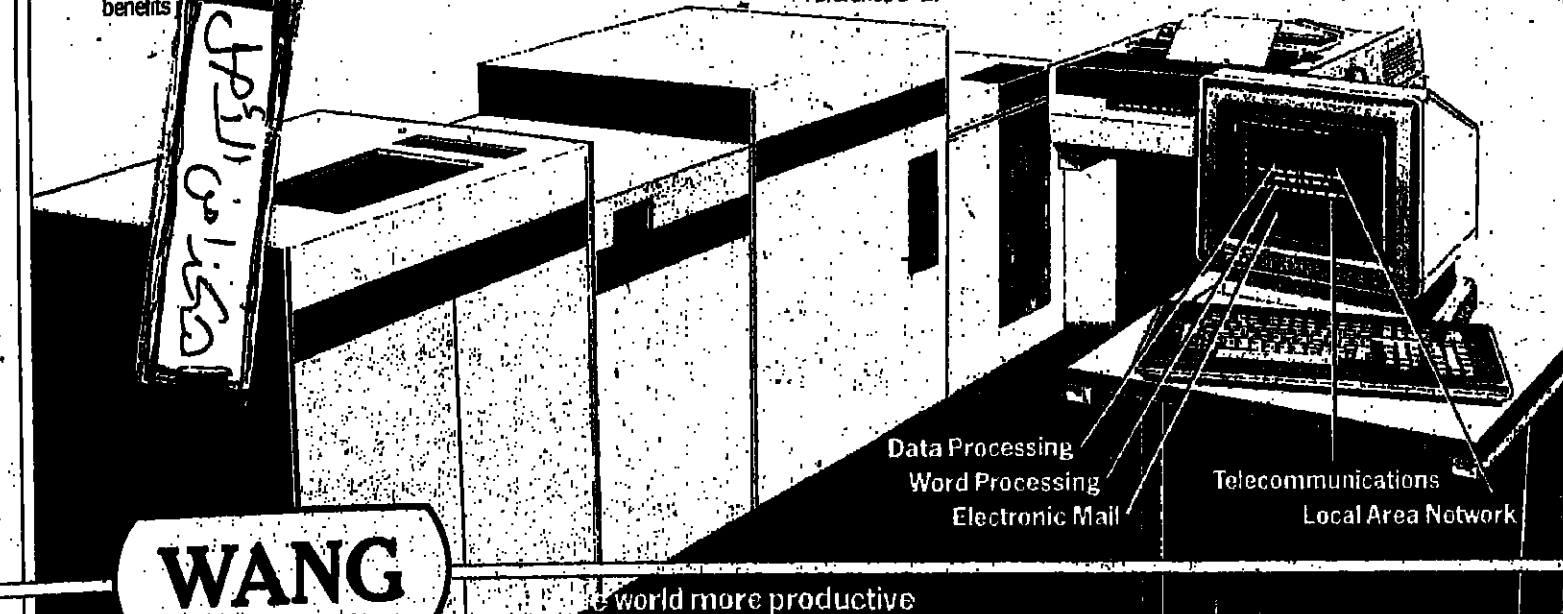
Computer Engineers

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Wang's families of user-friendly Computer and WP systems are powerful, versatile and easy to use, whether stand-alone or mainframe, and their competitive performance has produced continuous record sales. As a result we can now offer excellent opportunities to Customer Engineers with between 1 and 5 years field maintenance experience of powerful minicomputer and WP systems. We will develop and refine your customer engineering skills with initial and on-going benefits. Reward your efforts with an excellent salary and

As for opportunity, with worldwide revenues increasing over 700% in five years and impressive expansion continuing, your prospects for progression are excellent. Candidates must already have ONC (or an equivalent or higher qualification), a strong digital computer electronics background, and customer liaison experience. Please write with full career details to: Peter Gorton, Personnel Officer, Wang (UK) Limited, Brunel House, 57 North Wharf Road, Paddington, London W2. Telephone 01-258 0238 or use our 24 hour service on 01-935 7453 quoting reference S/2.



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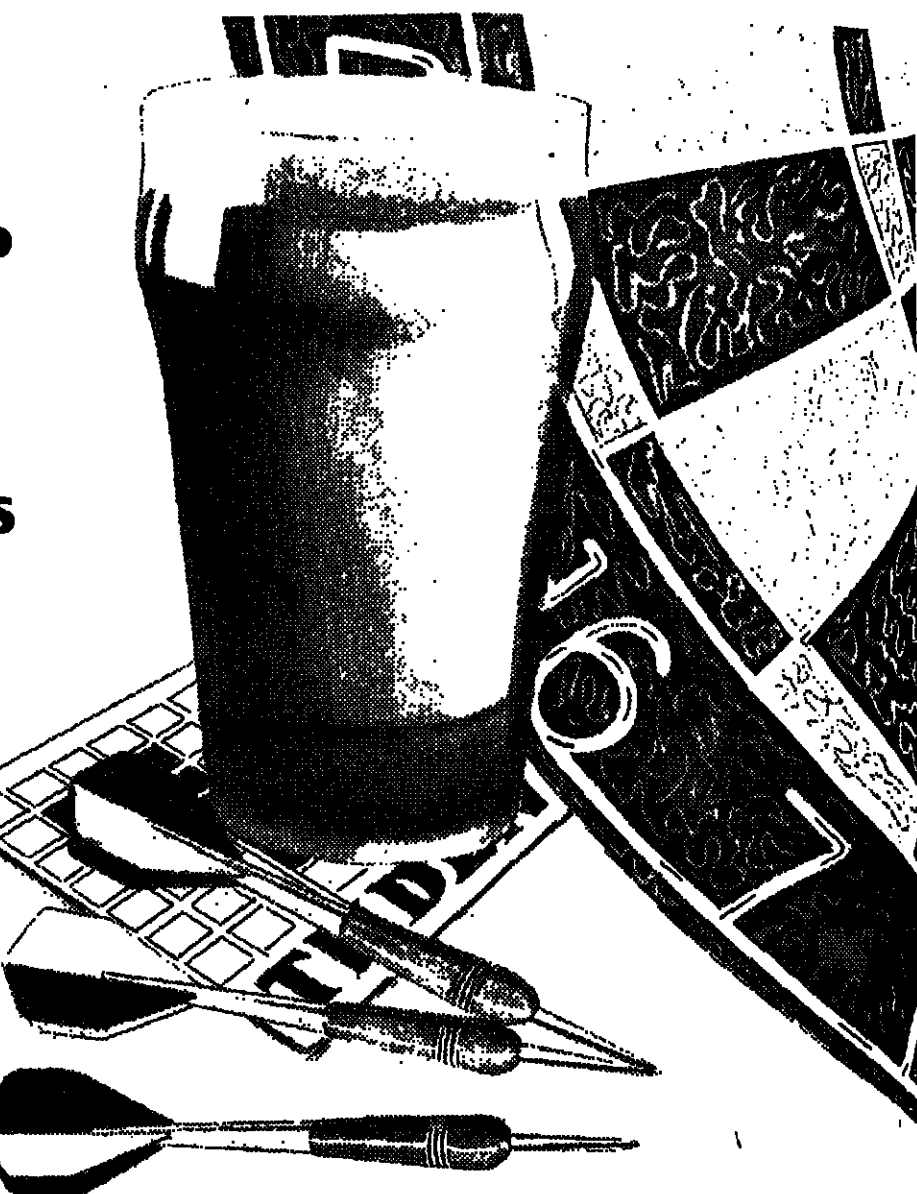
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The Trident Permanent Recruitment Division provides a confidential consultancy service to all levels of Data Processing staff ranging from Operator to Executive Manager.
Our National/International clients currently have ongoing requirements particularly for Programmers and Analysts with proven expertise of on-line and Database Management Systems.
We would like to hear from professional men and women who wish to progress their careers in a mainframe, mini or micro computer environment.
For advice on a well-informed move contact Peter Jazeph or Bill Evans on Camberley (0276) 64262 or write enclosing a detailed C/V.



SOFTWARE SPECIALISTS

Back in 1957, the Digital story began as a three man and one logic module operation. Today, in our 25th year, we have grown rapidly to lead the world in the design, manufacture and marketing of interactive computer systems. We are still enjoying tremendous growth in all areas of our worldwide organisation - and the software side of our UK operation is no exception. That's why we're now looking for at least four talented Software Specialists to join us in either Bristol or Basingstoke.

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For both locations, the common responsibility will be to provide a high level of software support to both new and existing customers. To be more specific, we need Software Specialists to join us in Basingstoke and Bristol to work in tandem with our sales team advising on the suitability of DEC products and assisting in demonstrations and presentations. Software Specialists are also required at both locations to provide installation and post-sales support; and again in Basingstoke, another Software Specialist to work in our telephone support function analysing systems faults and advising our customers' software personnel.

To meet the many challenges of any one of these equally rewarding positions, you must be a mature and creative professional, aged 23-35 with a University or College education with more than 2 years' relevant experience - ideally gained on DEC operating systems or hardware. You'll also need a full driving

REGIONAL LOCATIONS FOR...

licence and good all round communication skills. A successful background in either a product support or a pre-sales environment would be an advantage. If you're one of the men or women we're looking for, you can expect excellent rewards with Digital. In all cases, we offer attractive initial salaries together with a full range of valuable fringe benefits - including relocation expenses, where appropriate. And as you would expect from an expanding international organisation, the career prospects for the determined and ambitious are excellent.

So if you're an ambitious Software Specialist looking for more challenge, more responsibility and better rewards, ring us NOW on one of these numbers below. Alternatively, please write with full personal and career details to Tim Pedder at Digital Equipment Co. Limited, Wimgrove House, Basing View, Basingstoke RG21 2UR. Ref: SW/417.

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For the post in Bristol, please ring Mike Jackson on Bristol (0272) 656201 during normal office hours.

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SAFE provides products, support and services on a wide range of equipment including:

ICL SYSTEM TEN, SYSTEM 25 AND 2900
IBM SYSTEM/34 AND SYSTEM/38
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Major languages supported cover:
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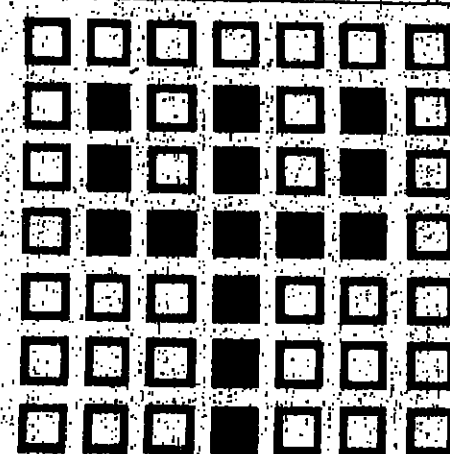
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Design Engineer

Bucks £9K-£11K

We are currently seeking a professionally qualified Design Engineer to work in a senior capacity for a prestigious communications manufacturer. Applicants must be capable of demonstrating their utilisation of both Analogue and Digital design techniques together with, ideally, a background in active-filter design. Ref: 5746.

Customer Support Engineer

Home Counties up to £8,500 + Car

Our Client is an established Data Terminal manufacturer looking to increase its field engineering resources. Customer Support Engineers are required to maintain an existing range of terminals, VDU's and micro-processors, faulting to component level, in an area encompassing North and East London postal districts and surrounding counties. Initial product familiarisation will take place at the Head Office in the South West. It is likely that the successful applicant is currently enjoying either a field service role or seeking a move to field engineering from R & D, and is qualified to at least ONC level in electronics. Ref: 5775.

Field Service Engineer

London up to £7,000 + Car

To meet the demands of steady growth, our Client - a leading manufacturer in the field of computer peripherals - is in the process of recruiting an experienced Field Service Engineer. Ideally candidates will be in their mid-twenties and familiar with the faulting of data terminals, VDU's, daisy-wheel and matrix printers to at least board-level. Although emphasis is placed on relevant experience, a formal qualification would be an added bonus. Ref: 5773.

For further information please contact Robert Hogarth quoting the appropriate reference.

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We provide and offer the ultimate resource by way of a broad range of services, recognised as industry leaders. With yet more new products to be introduced in 1982, we believe that we will not only have achieved leader status, but a level of excellence second to none.

We are seeking the following:-

- Highly successful sales executives from the computer services or software environment, with proven track record. Desirable experience would be in the areas of finance or financial modelling.
- Of particular interest are the highly lucrative territories available which are expected to yield in 1982 an extremely high income for those who are successful.

Prerequisite requirements are a good level of education, age 25/35 and resident within the London or Southern Region.

In return, we offer a remuneration package comprising a high base salary, commission and initial negotiable guarantee yielding first year earnings of not less than circa £14,000, where on target earnings would be c£16,000. A company car, full BUPA and a comprehensive training both in the UK and USA are also included, together with other very attractive incentives. For the ambitious and subsequently successful, we offer outstanding career opportunities.

For further information and immediate confidential interview, contact Chris Fry on 01 935 0671 (24 hour answering service) or 05827 2354 evenings and weekends or Paul Pearce on 021 236 3781 or 021 308 4908 evenings and weekends.



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One of the most exciting growth areas in the high technology industries is interactive real-time graphics systems. Used in CAD/CAM as well as the most demanding and intriguing areas of research these systems have had an enormous effect on industry. For more than a decade, Evans & Sutherland Computer Corporation USA has been shaping the future with high performance computer graphics tools. From CIG visual systems for commercial and military simulation to 3D Picture Systems for design and research, E&S products have set the standards.

Following several prestigious orders recently won in the United Kingdom a new addition to the European sales effort is being sought to take responsibility for Britain, Scandinavia and parts of Benelux. Based in Cambridge, the appointee will travel extensively dealing with the largest of European Industrial Blue Chips.

This high-profile position will attract executives who value their independence and wish to be in full control of their sales activities. Though a graphics background is not a prerequisite, you should have a record of success in computer or scientific sales, an empathy with technical professionals and a fascination with the latest state-of-the-art advances. In return you will receive the support necessary to deal at the highest levels, a first rate earnings package and a car of your choice. Further fringe benefits will be by negotiation.

To learn more about this unique opportunity with a company dedicated to the leadership of superior technology please contact JAMES DE BIUN on 01-938 1804. Meetings are scheduled to take place before mid-March.

SUPPORT PROGRAMMER

West Midlands based/UK travel £7.5K+ package

Our clients are a highly profitable division of a premier manufacturing organisation renowned for their excellent facilities and sophisticated approach to using current technology hardware and software.

Due to progressive systems development generated by users' demands, a requirement now exists for an additional Support individual to play a significant role in establishing and maintaining IMS routines for a range of manufacturing and commercial applications. This responsible position necessitates close liaison with users at a number of UK locations and, therefore, affords the attractive features of VARIETY and TRAVEL.

Candidates should ideally have not less than ONE YEAR'S experience with substantial IMS involvement gained in either a Cobol or PL/1 Installation. Knowledge of Assembler, JCL, CICS or TSO would be highly advantageous.

The income package is comprised of basic salary, standby allowance and bonus. Earnings are further enhanced by PAID OVERTIME. Relocation expenses will be forthcoming where appropriate.

To discuss this opportunity to further develop your career, please call Mike Wood quoting reference CW/304.



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The Company

In the U.K., Europe and the U.S.A., the communications business is both booming and buoyant and there are few companies that can rival our client in the pursuit of excellence of its products in this field.

The control of manufacturing and production has necessitated the growth of an international network connecting the U.K. with Western Germany, Northern and mid-Western America.

The Appointment

Modus has been requested to recruit a person to play a key role within the company. We need a young, dynamic and ambitious person to manage the MIS department - we are not looking for a seasoned manager, but somebody of project or team leader level who would like to move up a notch or two and take on the responsibility that such a position demands. The successful candidate will plan, organise and control the overall activity of the department.

Qualifications and Prerequisites

The successful candidate will probably be a graduate between 25 and 30 years old. An IBM background is essential, as is a knowledge of either IMS, which is preferable, or CICS - DL/1, accompanied by at least three years COBOL experience. Naturally, candidates with a manufacturing background and a knowledge of production, materials handling, order processing, purchasing and factory control will be very strong contenders.

The Configuration

Linked together, giving a tremendous amount of processing power, are two Amdahl V7's, an IBM 3033 and a 3081, all running under MVS. Access is made using an RJE, on-line 3270 system, networked via Germany to the U.S.A. IMS is the main interactive database in use and TSO/SPF is used for program development.

Future Plans

At present the MIS department is quite small, about five strong, but it is planned to expand over the next five years - so an excellent opportunity is being offered for someone to come in at ground level and really expand with the company.

A distributed system is in the experimental phase and it is possible that a local 4300, using CICS - DL/1, or even a Tandem computer will be installed - so there is a great deal of technical experience to be gained, if desired.

General Information

Housing in Hampshire is both reasonable and plentiful and the company offers an excellent relocation package - an ideal opportunity to enjoy the beauty of the New Forest.

Several trips to both Germany and the U.S.A. will be necessary, periodically during the year to liaise and co-ordinate activities with the company's divisional counterparts.

This must be considered as an attractive benefit but, more importantly is the chance to consolidate a really excellent career with one of the foremost 'blue chip' companies in the electronics industry today.

CW 25

Contact David Wallder for more details and information about the company.

IBM ANALYST PROGRAMMERS CENTRAL LONDON COBOL OR PL/1 TO £12,500

STRIKE OUT! This major international petrochemical company is currently expanding and seeks to recruit several analyst programmers to work on NEW SYSTEMS. They currently retain IBM 3033 hardware running under MVS using DATABASE. Applicants for this superb opportunity must possess a minimum of two years' COBOL or PL/1 preferably with at least 'A' level standard of education. This blue chip company can provide excellent scope for advancement and training opportunities in DATABASE techniques. REF.S.D.5866

RPGII & III ANALYST PROGRAMMERS

LONDON & H. COUNTIES SYSTEM 38 TRAINING c£13,000

Datascene have been dealing effectively with RPGII/III Analyst Programmers for nearly four years and our client has reached for and wide. We have recently taken a considerable number of vacancies in London and the Home Counties. The range of industries within the client database are wide ranging but include PETROCHEMICAL, BANKING, INSURANCE, ENGINEERING and SOFTWARE HOUSES. Ideally you should have at least 18 months' experience but preferably two years' together with a good standard of education. If you feel it's time for a change then give Datascene a call and discuss YOUR requirements with us. REF.M.GEN.1

ANALYST/PROGRAMMER LONDON BANKING PDP 11 SERIES UP TO £13,000

Due to further expansion this banking client requires an additional analyst/programmer to complement the current team. Ideally applicants should have in excess of two years' programming in either Aims, Basic, Basic + or + 2 with two years' systems experience, preferably on PDP 11/70 equipment. General preferences include a knowledge of banking or financial/commercial applications. This position offers excellent career potential and company benefits including mortgage subsidy, season ticket loan and many others. REF.R.5811

PL1 PROGRAMMERS & ANALYSTS SURREY IBM 3033 c£10,000

A recognised LIFE ASSURANCE company, based in a pleasant country setting yet approachable from South London requires PL1 or Assembler programmers. 6 MONTHS' PROGRAMMING is the minimum requirement but those with greater experience are especially needed. ANALYSTS with similar experience are also wanted. Experience of commercial or Insurance applications is useful. A knowledge of TP or database techniques would be beneficial. 4% MORTGAGES, free pension and life assurance are offered. Plus a very active sports and social club including Badminton, Squash, Rugby and Football. REF.D.5973

IBM COBOL PROGRAMMERS CENTRAL LONDON IBM 4331 TO £12,000

Our client, an international company, are seeking to recruit programmers to join their various project teams. They retain IBM 4331 running under DOS/VSE using COBOL, CICS and DL/1. They wish to appoint career-minded individuals who will be given plenty of scope for development. Successful candidates will have a good educational background with minimum two years' COBOL. Training offered in TP and DATABASE. Excellent salary plus benefit package. REF.S.D.5960

RPG II/III ANALYST PROGRAMMERS SURREY IBM SYSTEM 38 c£11,000

If you are currently programming in RPGII and will be for the foreseeable future then career wise you should be interested in the current System 38 RPG III vacancies currently available in Surrey. RPG III experience is useful but providing you have at least two years' RPG II experience, training will be given. Industries vary but include Pharmaceutical, Foods, Travel Companies, and Chemicals. Career progression within these companies is good and company benefits vary but are wide ranging. REF.M.GEN.2

ICL PROGRAMMERS E. LONDON/ESSEX TO £11,500

This large company situated on the East London/Essex borders is looking to recruit several programmers to work on various commercial projects. Successful applicants will have a minimum of two years' ICL COBOL experience with either George 2, George 3 or VMEB. This organisation can offer training in database and analysis and thus plenty of scope for promotion. They operate an excellent benefit package which includes free lunch, insurance, BUPA and season ticket loan scheme. REF.S.5985

SOFTWARE HOUSE VARIOUS MACHINES & LANGUAGES LONDON TO £13,000 + RELOCATION

Our client is currently expanding to software division and needs to recruit several analyst/programmers and consultants at its sites in City of London, Middlesex and Surrey. Successful applicants will have at least two years' experience in a business environment using either COBOL, RPG II/III or BASIC + 2. These positions offer a tremendous amount of variety in developing systems and solving business problems, user liaison and unrivalled opportunities for promotion. If you are looking for security and career development, ring for further details. REF.S.D.5926

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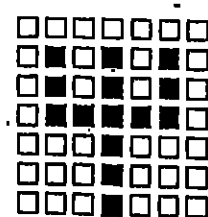
High calibre computer staff represent a substantial investment and DP management are continually faced with the problem of maintaining the delicate balance between a realistic, economical permanent staff establishment and coping with irregular eventualities such as:

- ★ Additional manpower requirements over a limited period for development or conversion work.
- ★ Once-off specialist expertise not available in-house.
- ★ Temporary cover for indefinable peaks in workload; permanent staff sickness; vacancies in permanent staff positions.
- ★ Releasing permanent staff for other duties.

Situations of this nature are inevitable in the time critical environment of DP installations, but Trident's Contract Staff service alleviates these problems and helps users to contain DP budgets within reasonable limits by fulfilling project requirements when, and only for as long as the expertise is needed.

Trident believes in good client relationships, developed only by combining a responsive service with a truly ethical business approach, and welcomes requests for client satisfaction references.

For Project Management, Systems, Programming and Operations contract staff, with proven ability on all mainframes and a variety of mini and micro systems — CONTACT



TRIDENT
Computer Services

The Parade, High Street, Frimley, Surrey GU16 5HJ.
Telephone: Camberley (0276) 64262
Telex: 858388

ROUGH & SMOOTH

OPERATIONS MANAGER
c.£15,000+car

Sainsbury's are currently seeking to appoint an Operations Manager.

By nature of the role it is likely that the successful appointee will have a dual personality — preferably not of the schizophrenic variety!

On the one hand you will have the ability to manage a department of multi-disciplined Operations staff, totalling over 100 people.

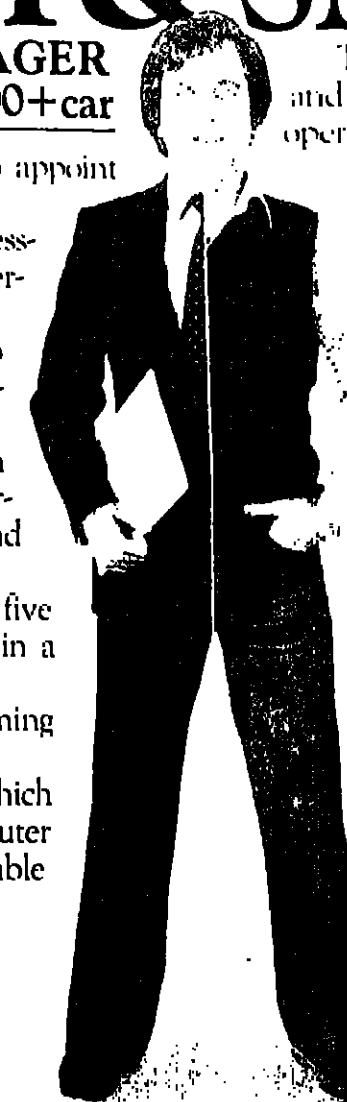
The role is a demanding one — at times even rough, from departmental performance monitoring and scheduling through to budgeting and budget control.

It is essential that you will have at least five years relevant operations experience gained in a multi-hardware environment.

Knowledge of systems and programming would be advantageous.

In reaching the departmental objective which is the optimisation of over £5 million of computer equipment you will be taking on considerable responsibilities.

On the other hand...



The continuous introduction of new hardware and software will put the smooth running of your operation under pressure.

This will require you to be totally involved — even to the extent of rolling up your sleeves in a trouble-shooting role.

As a natural communicator you will be familiar with users at all levels.

Based in London, Sainsbury's current hardware configuration is diverse, complex and ever changing.

Both IBM and ICL are represented, with the ICL operation being one of the largest in the country.

The challenge of change is a key aspect of this position and if you are looking for a very real role in a stimulating and dynamic installation, Sainsbury's would like to hear from you.

In the first instance, ring the number below, or clip the coupon. By return we will send you an Application Form and Company and Person Profiles.

Please send an Application Form and Company Profile to:

Surname _____

First name _____

Address _____

Home tel no _____

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0427

Recruitment Consultants

RJB MANPOWER SERVICES LTD.

FREEPOST 24, London W1E 5JZ. Telephone: 01-439 8591 (24 hour answerphone)

SAINSBURY'S

Dynamic Sales Management

With your strong manufacturer-based sales management background, your prospects look highly promising from where we are. — And that's in the world No 1 position in the supply of private videotex and advanced electronic office systems.

We've pioneered a revolution in the information environment of the business of the 80's with our R-range of mini computers and Teleputer range of terminals. A host of sophisticated new product developments, shortly to be announced, will continue to enhance the already impressive growth of Rediffusion Computers Limited.

Which means there couldn't be a better time for forward-thinking sales professionals to join us.

Area/Sales Managers

To handle large prestige accounts and organise and manage a team of sales and support specialists in the achievement of clearly defined quotes. Openings are throughout the UK and offer the real possibility of promotion to Senior Management level within the short-term.

Distributor/OEM Manager

To manage sales of videotex and microprocessor terminals to distributors and software houses, including arrangement of distribution agreements.

Proven experience in a similar capacity with a computer manufacturer is essential.

In all cases we offer excellent remuneration + car, generous relocation where appropriate and comprehensive range of benefits.

Please now for an application form. Or write with full C.V. to: Ken Coulter or Phil Norrhead.

Rediffusion Computers Limited

Kelvin Way, Crawley, West Sussex RH10 2LX.
Tel: Crawley (0293) 31211



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For further details contact **JEFF WALTON** on the number below. Or on 061-982 0002 (Evenings & Weekends).

Insight Marketing & Personnel Consultants

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Telephone 061-236 7026
24 hour answering service

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PROGRAMMERS
Cobol/Hewlett Packard/Applications exp

SENIOR SYSTEMS ANALYSTS
Masplac/Plcs, Engineering Background, IBM exp.

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Packages/Micro/Peripherals

SENIOR SYSTEMS ANALYSTS
Commercial Experience

PROGRAMMERS & ANALYSTS
Data General/Perkin Elmer/DEC

TECHNICAL SUPPORT

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DOS/CICS/Teleprocessing

PROJECT MANAGER
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Cobol/Assembler/IBM 3032

ANALYST
Visikon/Colbas

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Fortran/Pascal

ANALYSTS
2 years' experience + RPG 11

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Banking/Insurance

SENIOR PROJECT ENGINEER
Peripherals/Industrial contracts

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to £13k
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Bucks.

to £10k
Narrowwide

to £10k
Surrey

to £12k
Aston

to £12k
Herts/Surrey

to £14k
London/Home Counties

to £20k
Surrey/Berks/London

to £15k
North London

to £9k
Leicestershire

to £Neg.
France/Holland

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EMJAY

COMPUTER SERVICES



SNR PROGRAMMER

COBOL £9,500

Do you have two years' solid programming experience using COBOL and COBOL? Our client, in the field of finance, needs a senior programmer to look after the design through to implementation of various new projects which are in the analysis stage. CICS and PL/I experience would be an asset, but our client would be prepared to TRAIN in CICS if necessary. This position provides a unique opportunity. There is also a good benefits package including flexi-time.

BASIC + ANALYSTS/SYSTEM DESIGNER c.£11,000

This forward thinking company has opened to future requirements, and wants two systems analysts to head two new development teams. To qualify for these positions you must have at least one year's analysis experience in a commercial environment. A Systems Designer is also required with about eighteen months' design experience with a programming background.

PROGRAMMER to £11,500

This multi-national company with offices in all the world capitals, are currently enhancing their software development team, and to this end they require a PL/I programmer with a minimum of 2 years' experience, preferably in a financial environment. The successful applicants will receive an excellent remuneration coupled with an extensive benefits package which includes a subsidised house purchase scheme.

EMJAY Computer Services
Lancaster Chambers
27 Chancery Lane
London WC2

Call Harvey Kaye or Lynda Abi

Are you a commercial FORTRAN programmer? Our client, a financial organisation, requires your expertise. You should have at least two years' FORTRAN in commercial applications, preferably with an Assembler language, although this is not essential. This is an outstanding opportunity to move into a progressive environment, where hard work is rewarded with promotion into analysis and management. The company offer good benefits coupled to an excellent starting salary. Interested? Of course you are. CALL US NOW.

PROGRAMMER c.£7,500

Do you know BASIC + PL/I? If you have a minimum of one year's solid commercial programming experience using these languages, then this international company is for you. The hardware comprises two mid-range PDP 11s using RSTS/E. Applications are varied and they require a person who can handle all spheres of commercial applications. The company is offering an excellent salary, good promotion prospects and a very stimulating and progressive environment.

FORTRAN PROGRAMMER to £12,000

Are you a commercial FORTRAN programmer? Our client, a financial organisation, requires your expertise. You should have at least two years' FORTRAN in commercial applications, preferably with an Assembler language, although this is not essential. This is an outstanding opportunity to move into a progressive environment, where hard work is rewarded with promotion into analysis and management. The company offer good benefits coupled to an excellent starting salary. Interested? Of course you are. CALL US NOW.

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Process Control Analyst

LOOKING FOR A CAREER STEP IN
ADVANCED TECHNOLOGY?

COME TO DEESIDE FOR UP TO £10.3K

We are a recently formed organisation (an Anglo-American partnership) manufacturing and developing optical wave guides to telecommunication standards. We are now looking for an experienced and enthusiastic man or woman to join our computer team.

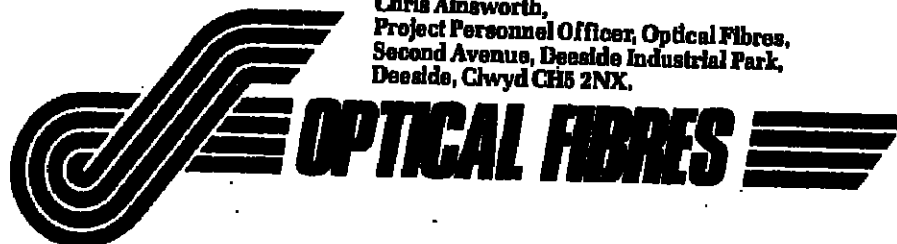
You will have 3-4 years experience in writing software in a process control environment on DEC PDP 11, using RSX 11M, a high level language and ASSEMBLER. A knowledge of system generation using RSX 11M is essential and continuing.

You will assist in the commissioning, development and maintenance of an Hierarchical Distributed Process Control System, using 1/44's, /34's and LSI 11/23's. Initially you will gain hands-on experience in the USA before returning for the implementation of the process at Deeside.

Our benefits package reflects our progressive company philosophy and includes 25 days annual holiday and generous assistance with relocation expenses in appropriate cases. We are located on the Chwyd/Cheshire Border within easy reach of the beautiful North Wales Coast and countryside, the ancient city of Chester and the big city amenities of Manchester and Liverpool. Attractive property is readily available at reasonable prices and nationwide communications are excellent.

Interested? Then write with comprehensive personal and career details to

Chris Alsoworth,
Project Personnel Officer, Optical Fibres,
Second Avenue, Deeside Industrial Park,
Deeside, Chwyd CH5 2NX.



SYSTEMS ANALYST

TELEVISION COMPUTER SERVICES

We are looking for a Systems Analyst on a two year contract, salary ranging from £9,895 - £12,563 who will be responsible for the design and implementation of computer systems for Television users in Accounting applications.

We require at least two years' successful experience in analysis, design and implementation of computer systems.

The projects involve liaison with a wide range of user departments and analysts must be capable of effective communication and negotiation. They should show strong self-motivation, flexibility and a thorough knowledge of and proficiency in computer processing techniques.

We require experience preferably of on-line systems design and implementation, preferably with ICL mainframe (1900 and 2900), and experience of costing systems.

Based West London. There are facilities for interest free ticket loans and this post will attract full holiday entitlement.

For further information contact Janet Holt on 01-743 8100 ext. 3693.

Please write or telephone for an application form direct to BBC Appointments, London W1A 1AA. (quote ref. 211/CW and enclose s.n.e.) Tel: 01-580 3334.

We are an Equal Opportunities employer

BBC tv

COMPUTER PROGRAMMER

REDDITCH

The installation of an IBM System 38 has formed an integral part of the development of Serck Services and currently we have an opening for another Programmer to join our already strong computer centre team.

To be successful you will be aged 20-35, with at least two years' experience of programming in RPG II, you will be familiar with IBM GDS, hardware and ideally financial and/or stock control systems.

Your reward package will include a high basic salary, company pension, and insurance and every opportunity to develop your career into systems analysis.

INTERESTED?

Write to David Green, Personnel Officer, Serck Services Ltd, Claybrook Drive, Wetherford Industrial Estate, Redditch, Worcester B98 0D2 with details of your experience and salary requirements.

TWO MARKETING EXECUTIVES

IDS is an established, successful and growing company specialising in high quality software products for IBM System/34 and System/38. INSIGHT, our market leading financial information system is to be joined by yet another product with equal potential.

We need two marketing executives to join our progressive team.

Your earnings packages will give you a very good basic salary plus a company car whilst our incentive scheme will give you a high salary in return for good results.

I would like to meet you only if you can earn £15,000 or more.

Please call David Hurst on 01-242 6637.

IDS

Interactive Database
Systems Ltd
46 Kingsway
London WC2B 6EN

(7082)

COMPUTER MANAGER

Salary £9,150-£10,152 Grade P01(1-5)

Applications are invited from persons with a sound technical background for this new post in the Treasurer's Department.

The Council is in the process of replacing its ICL 7503 terminal link and replacing it with an ICL ME29/37 machine. Some links with the Berkshire County Council's ICL 2978 main computer will remain, but independent development, together with local terminals and cash recycling terminals, is envisaged.

The successful applicant will preferably have experience of ICL equipment and systems, and possess the necessary managerial ability of commissioning the new ME29 and develop computing services within the Authority.

Bracknell is a modern town with good amenities, situated in a rural area of East Berkshire, within easy reach of London and the M4.

Housing may be provided in appropriate cases.

Benefits will include flexible working hours, a subsidised staff restaurant, sports and social facilities and the chance to join BUPA at a generous discount.

For further details and an application form, please ring Bracknell 59885 (24 hour answering service) and leave your name, address, job title and where you saw this advertisement. Forms must be returned by 5 March 1982.



BRACKNELL
DISTRICT
COUNCIL

(6821)

SYSTEMS ANALYST - BUTTON, SURREY

To £10,000
Our client is committed to providing an on-line real-time service to users across a wide range of applications. A vacancy has arisen for a Systems Analyst with two years' systems experience using databases, preferably in accounting systems.

SYSTEMS ANALYST - CENTRAL LONDON To £11,000
3-5 years' analysis experience to work in IBM mainframe environment. Programming background an advantage.

PROG. TEAM LEADER To £11,000
One of the largest and most up-to-date IBM mainframe installations with mainframe and micro as well, requires a COBOL programmer from an IBM environment. Applicants must have 4-5 years' commercial programming with management experience, preferably with database and COBOL.

ANALYST/PROGRAMMER To £9,000
Applicants must have 2-3 years' COBOL experience gained on Hewlett-Packard machines.

ANALYST/PROGRAMMER To £7,000-£9,000
2-3 years' experience is required using COBOL on IBM machines. Excellent prospects.

SYSTEM ANALYST S.E. LONDON To £10,500
A total of four years' DP experience is required, preferably with some programming background.

SYSTEMS ANALYST To £8,000-£9,500
To develop technical specifications from business functional specifications. Three years' analysis experience required.

Mid-level of two years' COBOL programming experience is required on mini computers. CALIFORNIA To £7,000-£9,500

Short and long term contracts are available for those with a minimum of three years' experience gained on IBM mainframe.

We will write with full details of experience or phone for an Applicant form.

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Datapoint (U.K.) Ltd. is one of the leading suppliers of business computer systems, local networks and office automation products with over 2,000 installations throughout the country and an impressive growth and profitability over the last six years.

We are now entering another major phase in the development of our Field Service force and require a number of Field Engineers in the following areas: Greater London, Middlesex, Bucks, Surrey, Kent, Essex, Suffolk, Hants, Birmingham, Bury, Oldham, Swindon.

Ideally applicants will have experience on main frame, minicomputer or the associated peripherals but candidates with suitable technical qualifications will also be considered.

A highly competitive package is offered, company estate car and all the usual large company benefits.

Please write or phone for an application form to:
The Personnel Officer,

DATAPOINT
DATAPOINT (UK) LTD. WINTER HOUSE, 400 NORTH CIRCULAR ROAD
NEASDEN, LONDON NW10 0JG TEL 01-459 1222, TELEX 92333

SYSTEMS ANALYST/ PROGRAMMER

c.£9000

To meet the challenge of continuing company growth, W. Thornton Ltd., manufacturers and retailers of high quality confectionery, require an experienced Systems Analyst.

You'll join a small team currently engaged in the production of systems on Hewlett Packard 3000 hardware. The work will involve the design, specification and testing of software systems and the implementation with users.

You should have at least 3 years' experience as a Systems Analyst together with the ability to communicate effectively. Additionally you'll need to be flexible and self-motivated as the post will at times involve working on your own initiative.

The salary and fringe benefits are attractive, including relocation expenses, and the job offers a genuine opportunity to make a significant contribution to the future development of the company's computerised systems.

For an application form please write or telephone the Personnel Services Manager, J. W. Thornton Ltd., Derwent Street, Belper, Derby, DE5 1WP. Tel. Belper 4181.

Thornton

SOUTH WEST UNIVERSITIES REGIONAL COMPUTER CENTRE UNIVERSITY OF BATH

SOFTWARE DEVELOPMENT

Programmers are required for research and development projects on mainframe and micro computers. Experience of VMS, Fortran, Ada, compiler internals, MASCOT, CP/M, PERO, Algol 68, Communications programming, ICL DAP, systems programming, or a Computer Science degree, will be a great advantage.

Salary scales: IB (£5,285-£8,925), IA (£5,070-£10,675) or £10,160-£12,860. The appointments will be for an initial fixed term.

Write or phone for further details and application form to:
Personnel Office, Bath University, Bath BA2 7AY (Bath 61244) quoting ref 82/20.

Closing date: March 16

(6801)

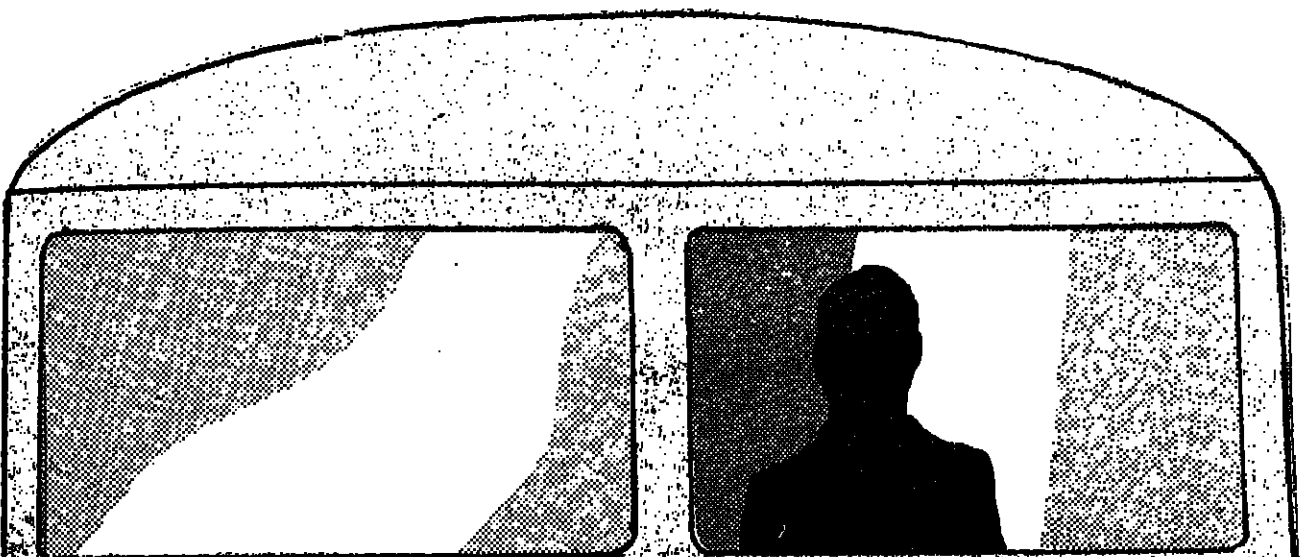
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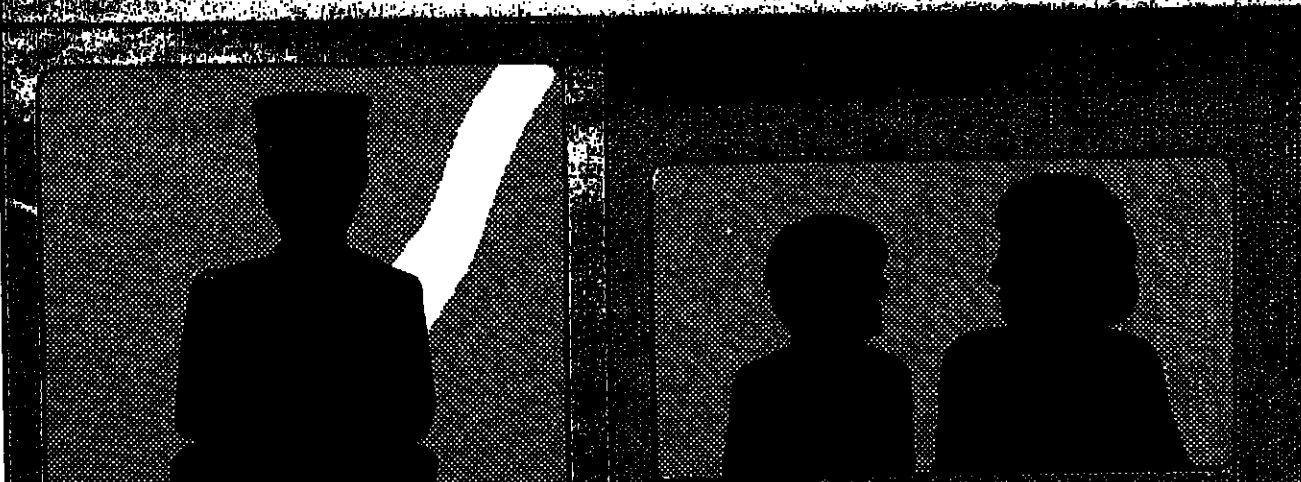
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211K

**SNR
PROGRAMMERS**

CITY & LONDON



Computer Search
01-404 0152

Climb aboard and you'll find this company's diversification of activities and career structuring just the ticket.

By following a policy of being totally committed to computerisation in all areas this nation-wide organisation is continuing to expand its network and range of applications in order to stay ahead of the field.

Your programming expertise and supervisory skills will be utilised to the full as you become totally involved with this expansion. You'll also be encouraged to show the potential of future project managers.

If you match the following requirements contact GORDON THOMPSON quoting AP 2612 for an early interview.

- ★ 3-5 years' programming experience
- ★ ICL mainframe background
- ★ Cobol expertise
- ★ Hons degree or equivalent
- ★ Management aspirations

BUICK COMPUTER SERVICES

**Recruitment Division 72 Rochester Row
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**Tel: 01-834 5923 (Daytime)
01-834 0061 (24 hours)**

D.P. RECRUITMENT CONSULTANT

We are seeking an ambitious and self-motivated Consultant with a professional approach to DP recruitment activities. You will display either a successful track record within recruitment consultancy, or a sound DP background, ideally in a customer support role. In return, we can offer higher personal rewards based on achievement, coupled with greater scope and responsibility.

D.P. CONSULTANTS

LONDON to £17,000+
To join a well-established management consultancy organisation and to advise clients in a wide variety of industries and applications. Applications will probably be in their mid-thirties, having established careers, with Systems/DP Management, and are seeking to broaden their horizon in the consultancy role. Experience of banking, insurance or other financial applications would be of particular advantage.

To MANAGING CONSULTANT Level

to £20,000+
This major organisation is looking for development personnel up to Managing Consultant, to advise and assist their clients within the U.K. and abroad. Applications must have a solid DP experience at the appropriate level, including a knowledge of COBOL or PL1 with CICS, and must be able to work on their own initiative. Excellent prospects for promotion. Similar requirements exist with a number of other clients who need DEC, PRIME and ICL expertise.

ANALYSTS TO PROJECT LEADER Level

to £15,000 + package
Our client is an international Organisation with a large investment in the development of on-line systems and are seeking development staff at all levels. The successful applicant will have a minimum of 3 years' programming experience preferably in COBOL, FORTRAN or ASSEMBLER, together with a proven track record in systems development. There is ample opportunity for career progression in a dynamic environment. The package includes relocation expenses, where applicable.

RPG 2/3 PROGRAMMERS to SYSTEMS CONSULTANTS

to £15,000
A number of our clients situated in London/Home Counties, South East England and Midlands are seeking Programmers and Analysts with 2-3 years' RPG experience, preferably on System/34 and/or System/38 equipment, capable of working on their own initiative. Applications include the specification, design and implementation of a wide variety of commercial systems; and for at least two sites this includes the added attraction of a COMPANY CAR, together with occasional trips abroad.

SENIOR SYSTEMS ANALYSTS

LONDON to £14,500+
This international Company is expanding its information service, and requires someone with strong financial systems experience, coupled with a working knowledge of TOTAL database design. The successful applicant is also likely to have mini/micro experience and a sound background in IBM programming.

SYSTEMS PROGRAMMERS

to £14,000+
A number of companies in London and the Home Counties need Systems or Support Programmers with up to 4 years' ASSEMBLER and/or COBOL, PL1, APL, with CICS/DLI experience to perform important roles in design and software development, in DOS/VSE, OS/VSE or MVS DB environments. Opportunities exist to enhance your skills, by keeping abreast of technological changes.

SENIOR SYSTEMS ANALYST

LONDON to £13,000 + profit share
This large company needs someone with at least 3 years' systems experience, to work on the design and implementation of real-time financial applications. Experience of database concepts are essential for this position.

SYSTEMS ANALYSTS

LONDON/HANTS/HERTS/KENT to £13,000
Applicants with at least 2 years' systems experience are urgently needed by several large companies specialising in the financial field. Knowledge of Banking, Insurance or other financial applications is advantageous, as is experience of IBM or DEC equipment. Attractive benefits accompany the salaries being offered.

SENIOR ANALYST (IOMS)

to £12,500 + benefits
Major North London Company, undergoing substantial development programme, is seeking a key person, preferably with IOMS experience to work on Personnel and related applications in an MVS environment. Benefits include bonus and relocation expenses. IOMS experience is required for a similar position with another London-based company involved in the engineering and construction business.

SENIOR ICL PROGRAMMERS U.K. AND ABROAD

to £12,000 + allowances
Major Software House has an ongoing requirement for Programmers with at least 3 years' COBOL experience to work on various client projects. The successful applicants must have a good understanding of ICL software, preferably with VME/B and IOMS. Generous overseas allowances given.

SYSTEMS PROGRAMMERS to TEAM LEADER Level

BERKS to £12,000
A market leader in the application of advanced microprocessor technology needs computer professionals to work on projects involving the application of state of the art 8 & 16 bit microprocessors for dedicated engineering applications. Candidates must have a minimum of 2 years' systems software programming experience using ASSEMBLER, SS, FORTRAN, PASCAL, or ALGOL.

COBOL PROGRAMMERS LONDON/HERTS/MIDD/ESSEX

to £12,000
A number of predominantly financial organisations require Programmers with 1-3 years' experience, preferably in a DOS/VSE environment, with CICS and DLI, a distinct advantage. The chance to work on a wide variety of interesting development projects is coupled with good financial rewards and attractive perks.

BUSINESS ANALYSTS

MIDD/LONDON to £11,000 + car
Good financial background, plus confidence and personality is needed for these interesting positions, involving project negotiation, systems design and specification in a user-orientated environment. Some travel may be involved.

ANALYST/PROGRAMMERS

MIDD/LONDON to £11,000 + bonus
The leading Software House requires Analyst/Programmers for the development of a wide variety of interactive real-time systems. Applicants must be capable of working on their own initiative and have a sound programming background. A knowledge of DATA GENERAL equipment would be an advantage.

FORTRAN SPECIALISTS

LONDON/HOME COUNTIES to £11,000
Programmers and Analysts are required to join existing development teams to work on a variety of applications including scientific, engineering and commercial projects. An IBM, DEC or GA background would be a plus, but is not essential. Excellent fringe benefits.

DATA PROCESSING MANAGER

to £11,000
This rapidly expanding organisation is seeking a D.P. Manager to take responsibility for the running of their Systems/38 installation. This position would ideally suit an Analyst/Programmer with RPO/23 together with Systems/34 or 38 experience, capable of taking on this new role.

PL1 PROGRAMMERS LONDON/HOME COUNTIES

to £11,000 + benefits
A minimum 2 years' PL1 experience is required for development of on-line applications and a working knowledge of CICS and DLI would be an advantage. Several of our clients are seeking Junior Programmers with at least 6 months PL1 experience, with prospects of moving into analysis.

The above vacancies are only a token selection taken from our current files, and we are always pleased to hear from computer professionals wishing to further their career objectives. (8822)

SYSTEMS INSTRUCTOR

LONDON to £11,000
This organisation, highly skilled in the training of all levels of development personnel, is seeking a talented Analyst to impart the knowledge, techniques and disciplines of systems analysis.

BASIC(PLUS) & ASSEMBLER PROGRAMMERS

TO £10,500 + BENEFITS
We have a number of vacancies in London/Home Counties for Programmers with up to 18 months' BASIC + AIMS or ASSEMBLER experience, with the opportunity to work on a wide variety of commercial and scientific systems. Excellent opportunities for career progression, plus attractive fringe benefits, including low interest mortgage facility, bonus schemes and low cost travel.

PROGRAMMER/ANALYST

LONDON to £10K + profit share + bonus
This Software House requires a dynamic person with imaginative analysis skills and two years' IBM COBOL, to play a leading role in the development of interactive systems on IBM 4300 equipment.

ANALYST/PROGRAMMERS

ESSEX to £10,000 +
Our client is looking for DP professionals with at least 12 months' commercial Systems Analysts together with a working knowledge of COBOL. As the installation is converted from ICL to IBM 4300 equipment, this is an ideal opportunity to gain experience on new equipment. Excellent fringe benefits.

PROGRAMMERS AND ANALYSTS

SUSSEX to £10,000
Expanding manufacturing company is looking for Programmers and Analysts with a minimum of 2 years' experience in a low level language. Successful applicants will be trained on IBM hardware and equipment manufactured by the company. Excellent prospects.

PROGRAMMERS

LONDON/ESSEX to £10,000
This company needs Programmers with 2 years' experience of IBM COBOL, to cope with their expansion plans. An ideal opportunity exists to progress to Analysts on medium and large systems.

ANALYST/PROGRAMMER LONDON/ESSEX border

to £9,000 + leased car + BUPA
An Analyst/Programmer with COBOL experience is required to join expanding DP team in high cost durable distribution business. UNIVAC experience, plus the ability to work with non-DP staffs are distinctly advantageous.

PROGRAMMERS & ANALYSTS

SUSSEX/KENT to £9,500-£12,000
Expanding electronics company need Programmers and Analysts to develop a variety of commercial or scientific systems. Applicants must have a Degree, together with a minimum of 2 years' programming experience using IBM or DEC equipment. Opportunities also exist for Programmers to be trained in Analysis.

ANALYST/PROGRAMMERS

SUSSEX/KENT to £9,000-£11,000 + mortgage
Several major insurance organisations are seeking computer professionals with at least 18 months' COBOL experience to work within their development teams using database software on IBM 370/4300 and UNIVAC 1100 equipment. Opportunities exist to gain an in-depth knowledge of database techniques and skills associated with networks.

ANALYST/PROGRAMMERS

HERTS/LONDON to £9,000-£11,000
Several companies involved in Banking, Insurance, and other commercial applications require staff with at least 12 months' analysis experience and a sound COBOL or BASIC+ programming background. Experience of DEC, BURROUGHS, or IBM equipment are essential for these positions.

H.P. ANALYST/PROGRAMMERS

to £8,000-£11,000
Several well known companies, situated in Middlesex, Beds, Herts and the City, have urgent requirements for Analyst/Programmers who have had exposure to HEWLETT PACKARD 3000 equipment and software. Experience of distributed database systems would be an advantage, but not essential.

ANALYSTS & PROGRAMMERS

to £7,000-£10,000 + benefits
We have been advised by a number of ICL 1800/2800 Clients in Central London, Home and Southern Counties of vacancies for Analysts and COBOL Programmers with 1-3 years' experience to join their development teams. Some online experience would be useful, plus a good understanding of ICL systems software. Benefits include PPP, and subsidised mortgage, productivity bonus, flexi-hours.

JUNIOR PROGRAMMERS & ANALYSTS

to £6,000-£9,000
A number of clients situated in London and Home Counties have vacancies for Junior Programmers and Analysts with up to 12 months' COBOL experience, to assist in the development of a variety of applications, including banking, manufacturing, etc. Benefits include Mortgage and Subsidised Restaurant and Season Ticket Loan.

JUNIOR (TRAINEE) BUSINESS ANALYST

MIDD to £5,000-£7,000
This position would ideally suit someone wishing to move into pure Business Analysis. The successful candidate will possess good communication skills, preferably with a measure of commercial experience and theoretical Systems knowledge.

SHIFT LEADER

HANTS to £9,000 + benefits
This large company requires a Shift Leader to take responsibility for one of their three shifts. Supervisory experience and a working knowledge of BURROUGHS 6800 are essential for this position. Benefits include mortgage subsidy and N.C. Pension.

COMPUTER OPERATORS

ESSEX/MIDD/LONDON to £7,300+
Two financial organisations require operators with at least 18 months' DOS/VSE, OS or MVS experience, to work 2 and 3 shifts plus occasional overtime. Benefits include mortgage subsidy for London vacancy. Good prospects.

COMPUTER OPERATOR

ESSEX to £6,500
This company needs an Operator with 12 months' experience on 2804/2860 operating in a 2 shift environment under EXEC 85/OME. Applicants must reside within commutable distance to Harlow.

PROGRAMMING CONTRACTS

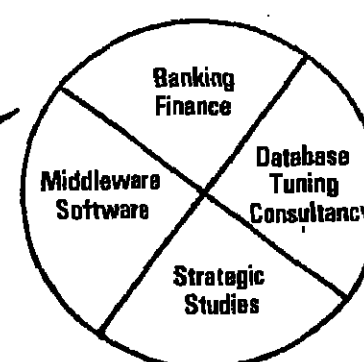
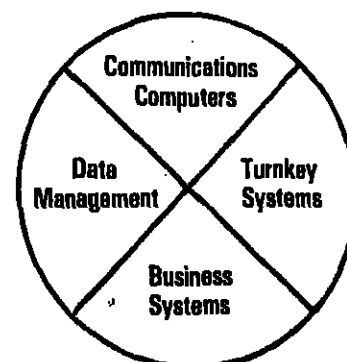
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| PL1 CICS/PL1 | U.K., EUROPE & U.S.A. | 3-12 months |
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| PL1 Design | U.K. | 3-6 months |
| PL1 COBOL | U.K. | 3 months |
| PASCAL (Preferably on T.J.) | U.K. | 3 months |
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**Consultants
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If you have had previous experience with any of the above IBM systems you now have the opportunity to extend your skills on a variety of exciting projects. Technically and commercially minded candidates will derive every satisfaction from applying their skills to their maximum extent. In this company, business systems design takes every advantage of hardware and software features as a matter of course.

Our client is a successful, profitable and expanding company with an international reputation for advanced computing and communications skills. They provide services and products in various countries around the world to major companies, professional bodies and government organisations. For employees the company provides an excellent range of benefits including relocation assistance where appropriate. Prospects for advancement and long term career development are excellent.

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HR

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UNIVERSITY COLLEGE CARDIFF COMPUTING CENTRE

COMPUTER OFFICER

in the COMPUTING CENTRE to undertake responsibility for planning the development of computer communications at Cardiff. The main areas concerned are the connection of a new Honeywell Multics computer to the South West Universities Computer Network and the development of a Local Area Network involving university institutions within Cardiff. Applicants (preferably graduates) should have experience of successful projects in implementing and co-ordinating communications networks and should be familiar with standard modern, XDS, protocols. The appointment will be on the 'Other Related' salary scale Grade 1A (£2000-£2675) or Grade 1B (£1910-£2580). Applications (2 copies, together with the names and addresses of two referees, should be forwarded to the Vice-Principal (Administration and Registrar, University College, PO Box 26, Cardiff, CF1 1TL, from whom further particulars may be obtained. Closing date 15th March, 1982. Ref: 525.

THE UNIVERSITY OF BIRMINGHAM

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Required for Engineering Production to provide general programming services. Must be trained and experienced in FORTRAN and implemented in FORTRAN and have two "A" levels or similar. Salary scale £4491-£5718 p.a. Application form from: Assistant Secretary Personnel Office P.O. Box 363 Birmingham B15 2TT Ref: 173/b/1. (8873)

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| DG | INFOS COBOL Prog. | 3 months | N London |
| ICL | 2800 VME/B IDMS TP | 6 months | W London |
| ICL | VME/B Programmers | 3 months + | Various |
| IBM | Analyst (MVS VSAM) | 3 Months + | City |
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WE WOULD LIKE TO TALK TO YOU

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We are a newly established subsidiary of a major U.K. company and our business is Micros. If you feel you are capable of accepting the challenge then write immediately with C.V. or telephone for an appointment to: IRVING SCOTT, GENERAL MANAGER, SHAW BUSINESS CENTRES LIMITED, 24 OXFORD STREET, VICTORIA SQUARE, BOLTON. TEL: 0204 394156.

Interviews will take place in our London showrooms at 40/41 Pall Mall, London, SW1. (8890)

ESSEX

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TO £11,000

AMDAHL MVS JES2 IMS/VS
DATA COMMS EUROPEAN
NETWORK

A major international manufacturing company has interesting career opportunities for Software Support Programmers to help with system tuning, the introduction of new software, the support of additional software packages and the support and development of a data comms European network based on ITT 3805s.

You must have:

- ★ At least three years' experience in software support.
- ★ ASSEMBLER experience.
- ★ MVS with JES2 experience.
- ★ The ability to work in an organised manner and without excessive supervision.
- ★ Good powers of communication.

Although not essential, it would be useful if you have any experience in supporting IMS/VS or teleprocessing software.

For further information, please contact MARK IRENS - Advising Director quoting reference CW2502/1.

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This excellent opportunity to join a massive European computer and peripheral manufacturer is open to candidates with a sales background or good systems support personnel aspiring to sales.

The fundamental requirement is an intimate knowledge of the Communications Industry including Telex, Telegraph, Message Switching, Word Processing, etc.

We anticipate the ideal candidate will be working at present with a major supplier of this type of equipment and should be able to become productive with a minimum of new product orientation.

Please contact BOB BOWER - Advising Director to arrange a quick meeting.

Ref. CW2502/2

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They need another Sales Executive to join their successful team. The rewards will be excellent for the right person who should have:

- ★ A strong technical/engineering background in current disk technology.
- ★ A sound understanding of the OEM/Distributor market place in U.K.
- ★ A successful record in sales or support with the ability to move into sales.

Please telephone BOB BOWER - Advising Director for details.

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BOMARC

Computer Weekly

March 4th, 1982

MIDLANDS RECRUITMENT FEATURE

The March 4th issue of Computer Weekly - Britain's highest requested computer journal - will contain a special feature outlining career opportunities in the Midlands.

Computer Weekly is the only computer journal to regularly publish editorial features covering a variety of subjects linked to the job market.

The combination of this special editorial feature together with Computer Weekly's highest penetration of the key job titles of Analyst, Programmer and Operator, provides a first-class recruitment advertisement platform.

To book your space ring:

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SOFTWARE RELEASE MANAGER

INTERNATIONAL RESPONSIBILITIES

TO 15K

This is a new, key appointment with an international manufacturer based in London, with responsibilities throughout Europe.

Candidates should have worked in an S.L.D.C. environment and MUST have specific experience of:

- Software distribution and literature control.
- Establishing software release strategy.
- The management of software distribution in a manufacturing environment.
- Ensuring software vendor obligations.
- The pre-release and controlled release of software.
- The management of release schedules.

The remuneration package for this challenging and demanding role is excellent, comprising a salary c.£13-£15K, plus a company car and the usual big company benefits together with significant career progression prospects.

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Finance Department
ANALYST/PROGRAMMER
Post 105F

Salary S.O.2 £8,991 to £9,522 per annum

C.M.C. Reality Computer System shortly to be installed and an experienced analyst required to set it up. Applicants should have at least 2 years' experience (using high level language preferably BASIC, be innovative and capable of dealing with users at all levels. Good programmers looking for career progression considered. Casual User car allowance, car loan facilities, removal expenses and other expenses up to £800.

Application forms and job descriptions available from Personnel Department, Council Offices, Central Avenue, Sittingbourne, Kent, ME10 4NT (telephone Sittingbourne 24381 ext. 214). Closing date 18th March, 1982 and interviews to be held 26th March.

PAISLEY COLLEGE

COMPUTER
OPERATOR
(SHIFT LEADER)

A vacancy exists for a Shift Leader to work in the Computer Centre, which provides a service based on PRIME hardware. Applicants must have experience in computer operations at a supervisory level. Experience of Prime equipment would be an advantage but is not essential. Two shift working is operational during term time, and the Salary Scale is £8226 to £8639 plus shift allowance (25%). Application forms are available from the Personnel Office, Paisley College of Technology, High Street, PAISLEY PA1 2BB (tel 041-987 1241 ext. 226) to whom completed forms should be returned by 10 March 1982.

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- ★ On-line experience - Ideally CICS

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Mott, Hay and Anderson are international consulting engineers with a very wide practice in civil and associated mechanical and electrical engineering. We require an Engineer with experience of structural analysis, including the finite element method, and of Fortran Programming to join our Computing Services Group. The group provides a wide range of computing services for the company and to outside clients.

The successful candidate, although specialising in structural analysis, would work closely with other members of the group. The firm's computing facilities include a DEC VAX 11/780 computer, computer aided draughting and word processing systems.

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Associate for Personnel, Mott, Hay and Anderson Holdings Ltd., 20/26 Watlington Road, Croydon, CR8 2UL.

Mott, Hay & Anderson
International Consulting Engineers

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COMPUTER DEPARTMENT

An ICL 2856 Computer has recently been installed running under DME/GEORGE 3, shortly to be replaced by an ICL 2988 under CME. The Authority has an extensive computer development plan.

To implement this and assist in conversion to VME we require:

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(New Posts) £8991-£9993 p.a.

At least 3 years' COBOL programming and, one year's experience in Systems Analysis.

(B) 1 SENIOR PROGRAMMER

£7371-£9528 p.a. according to experience.

At least three years' COBOL programming.

Candidates must also have extensive experience of either GEORGE 3 or VME operating systems.

Application forms and further details from Chief Personnel Officer, Council Offices, Watlington Road, Ashton-under-Lyne, Greater Manchester OL5 6DL to be returned by the 16th March, 1982.

Assistant Computer Operations Manager

£10,000

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These days, very few companies really need your skills. Their business position is weakened and they foolishly look at data processing activities as an unnecessary evil. Hence, there's little for you to be in control of, except your dissatisfaction.

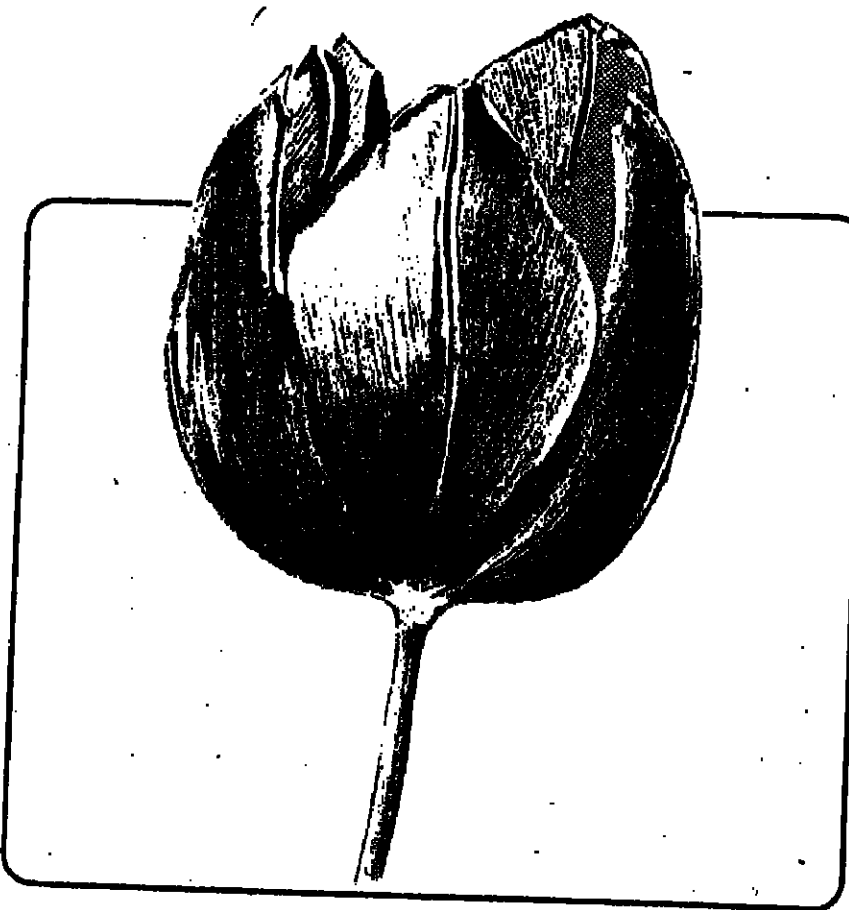
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To apply, please telephone Norma Rolph on Stevenage (0438) 4371 for an application form.

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HOLLAND



IBM ANALYST-PROGRAMMERS AND PROGRAMMERS

ADVANCED IBM INSTALLATION
The organisation utilises large IBM hardware and an on-line database system is operational. In addition, a network with distributed databases at its offices in North and South America and Europe is being set up. COBOL is the main programming language.

WORKING ENVIRONMENT
The development team comprises a number of experienced analyst programmers who work individually on projects or combine into small project teams as the need arises. A high proportion of the staff is British and English is the working language of the installation.

EXPERIENCE REQUIRED
For the analyst programmer vacancies, highly experienced candidates with at least five years' varied commercial work utilising COBOL on large IBM hardware are needed. Some database and TP experience is desirable. For the programmer vacancies, three years' experience of COBOL on large IBM hardware and software with exposure to DB and TP are desirable. For both positions training will be given to fill any technical gaps.

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There is considerable flexibility in what can be offered and in addition to the basic salary, a vacation allowance, annual bonus and tax-free travel allowance are paid. The total package will range from perhaps £11,000 at the more junior level to £17,000 for a suitable senior person and will ensure a substantially higher standard of living for selected candidates. Medical insurance is paid by the Company.

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LANGUAGE

English, as well as being the working language of the installation, is generally spoken throughout Holland, which considerably eases settling in problems.

INTERVIEWS

Initial interviews with the client's representatives will be held at our offices in Nantwich on 4th March and in London on 8th March.

For an initial discussion, ring me, Neville John, on (0270) 827206 Office Hours or on (0270) 213116 Other Times, or write to me at the address opposite, quoting Ref 207/CW.



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Languages? The lot - **ASSEMBLER**, **CORAL**, **FORTRAN**, **PASCAL**, **RTL/2**, **BASIC**, 'C' language or anything down the high or low level list.

Hardware? DEC, Hewlett Packard, Ferranti, Data General, Prime, Intel, Zilog, Motorola, Tandem, etc., together with relevant operating systems (incidentally, we'll roll out the red carpet if you've got UNIX experience).

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Clients seeking the aforementioned are users, manufacturers, and software houses, in London, the Home Counties and further. Some offering U.K. and overseas travel, some offering cars and other attractive benefits - AND - if you have good experience of digital exchange systems and speak German, Switzerland is waiting for you.

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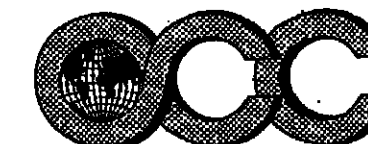
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Benefits include relocation to the U.S., full medical coverage, paid overtime and annual round trip airfare to U.K.

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Representatives from our New York and Dallas Offices will be over commencing 8th March, 1982, to discuss your career prospects.

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Age and specific machine experience are less important than ability and commitment. An attractive salary is offered, together with relocation assistance where necessary, and other benefits.

Please write, giving brief details of experience and qualifications to:

The Company Secretary
Independent Chemists Marketing Ltd
51 Boreham Road
Warrminster
Wiltshire BA12 8JU
Tel: 0983 215555



(8687)

Guy's Hospital Medical School GRADUATE RESEARCH ASSISTANT

with experience in computer programming, required as soon as possible for two years in Anatomy Department, to develop programs for the image analysis of radiographs and to help in the analysis. Post would suit graduate in computer science with an interest in medicine or biology. Salary £5,282-£5,876, plus £1,036 London Allowance. Apply in writing, with curriculum vitae, to the Secretary, Guy's Hospital Medical School, London Bridge, SE1 8JT, quoting Ref. A.N.Z.

UNIVERSITY OF BIRMINGHAM DEPARTMENT OF PHYSICS Hardware Engineer

Applications are invited for the post of Hardware Engineer (male/female) in the Elementary Particle Physics research group. The successful applicant will be required to design and commission electronic equipment including microprocessors. A degree or equivalent in appropriate electronics subject is required. Some experience in an electronics service and development environment is desirable. The post is funded on Scale 18 (£2285-£2825) by a rolling grant from SERC. The appointment will be for two years initially. Applications should be made to the Senior Assistant Secretary, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, from whom application forms and further particulars are available, to whom applications should be sent by Friday, 19th March, 1982.

BOX NUMBERS

Box number replies should be addressed to:

Box Number
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Buttton, Surrey SM2 6AS

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Applicants should have experience of interactive computer systems, preferably based

on Prime or VAX. Ability to communicate with non-computing professionals and a willingness to travel frequently in the UK and sometimes abroad is essential. Salary negotiable but will primarily be based on age and experience.

To apply, please send a copy of your curriculum vitae, quoting ref: IEA. This position is open to both men and women.

Cambridge Recruitment Consultants

1a Rose Crescent, Cambridge CB2 3LL. Telephone: 0223 313116. (8660)

THE UNIVERSITY OF AUSTIN IN BIRMINGHAM DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING Research Assistant Digital Image Processing

Applications are invited for the above post to work on a three-year SERC sponsored programme of research in digital image processing. Applicants should preferably be qualified to honours degree level in electronics engineering, computer science or a related discipline. Experience of real-time software development and/or digital signal processing, while not essential, would be an advantage. Commencing salary will be within the range £5,285-£6,070 per annum, rising by annual increments to £7,700 per annum. Application forms and further particulars may be obtained from the Staff Office (quoting Ref. 94721). University of Austin, Birmingham, Gosta Green, Birmingham B4 7ET. Tel: 021-268 3611 Ext 201. Closing date for the receipt of applications is 19th March, 1982. (8643)

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We are an expanding systems company with a growing number of Apple Micros, terminals, printers and hard disk based installations in the field.

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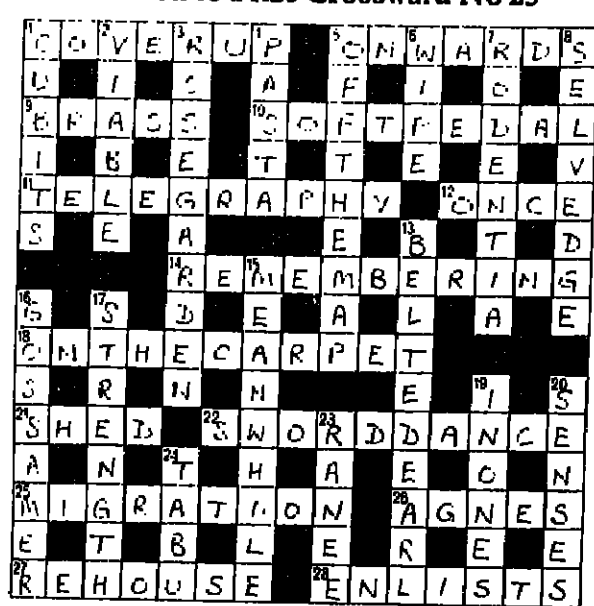
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You could be one of the DP professionals V.S.S. (Aust.) will be interviewing in London during April '82. To obtain the VSS information kit and application forms telephone Mr. D. M. Smith on 01-240 2881 Ext. 34. (8680)

CROSSWORD

Solution to Prize Crossword No 25



LECTURER in computer science James Inglis, of Birkbeck College, University of London wins £10 in our February competition: A prize of £5 goes to John Dawes, a project manager with ICL at Reading, and P. W. Thompson of Billingham.

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Computer Weekly

March 4th, 1982

**MIDLANDS
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The March 4th issue of Computer Weekly - Britain's highest requested computer journal - will contain a special feature outlining career opportunities in the Midlands.

Computer Weekly is the only computer journal to regularly publish editorial features covering a variety of subjects linked to the job market.

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London WC1E 7HT

**PROGRAMMING
AND
STATISTICAL
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Salary in the range £3,200 to £7,510 depending on experience and qualifications.

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Application forms and further details from the Deputy Administrator, Oxford Polytechnic, Headington, Oxford OX3 9BP. (8810)

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North London

It is essential that candidates have a track record of 4-5 years in selling telecommunications equipment, high level contacts with major corporations and direct experience of telephone communications. A sound technical knowledge is desirable and applicants should be capable of negotiating at senior management level with particular emphasis on PABX equipment.

If you can assimilate information quickly, are self sufficient and self motivated and able to sell creatively, then you can expect to earn in excess of

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(Daytime or evenings)

(8801)

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(PERIPHERALS)**

**LONDON AND
HOME COUNTIES**

c. £20K + car

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Although it is preferable that your experience has been gained within the computer industry, consideration will be given to those applicants with a proven record in business equipment or office product sales.

For further information contact Brian Mawdsley quoting Ref: 5783.

**Lloyd Chapman
Associates**
125 New Bond Street, London W1Y 0HR 01-499 7781

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A Sales and Marketing Services Company**SALES EXECUTIVES**
Last year our client introduced
a new product every 10 working days
— How about your company?
£18,000 and COMPANY CAR

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Continuing expansion has created the need for additional sales executives within two sales divisions:

Major Accounts and Information Systems

Responsibilities will include the company's full product range, selling to both existing clients and new accounts within geographical or nominated account territories based in

**LONDON & HOME COUNTIES
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We are seeking sales executives who are fully experienced in selling computer systems for a significant manufacturer as well as having a thorough understanding of business applications. Candidates who are currently successfully selling at a high level within large corporations and institutions, will be of particular interest.

- The company is committed to the continual development of new products.
- It has an exceptionally powerful networking capability.
- The product range includes comprehensive 'electronic office' facilities.
- Extremely powerful systems software and program development aids.
- Most of the company's sales management comes from its own salesforce.
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C. £1,200

The Society of Motor Manufacturers and Traders is a leading trade association

concerned with the promotion of the interests of the motor industry and its

contribution to the national economy.

There is a developing systems department, working on motor industry market

research and membership information, with a vacancy on their small team,

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A programmer with at least two years' experience is required daily to work on the

PDP 11 mini computer, the operating system in use is RSK 11 M, the language

used is FORTRAN. The successful candidate will also be responsible for the

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Basic and Cobol is required.

Benefits include contributory pension scheme, BUPA,

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25 plus public holidays, car parking and interest free

season ticket loan.

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Applications are welcome

from both men and women

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Executive
Selection**

**Systems Analyst
NORWICH**

Nacanco Ltd is the U.K. subsidiary of the National Can Corporation of Chicago, U.S.A. We have recently installed an IBM 4341 computer which includes a telecommunications network and uses VM/CMS and OS/VS1.

Our requirement is for an experienced Systems Analyst to play a major role in the development of new and revised on-line applications. This is a position of responsibility within the data processing department.

The successful applicant will have had a significant involvement in the investigation, design and successful implementation of at least one major project. Experience in a manufacturing industry would be advantageous.

Salary will be commensurate with the experience offered and assistance will be given with relocation expenses to the Norwich area if necessary.

Applicants should send career details including current and expected salary to: Data Processing Manager, Nacanco Ltd, Spilhouse Rd, Norwich NR7 8AT.

Nacanco Limited

Your chance to break into sales

c.£14,000 + car

Our client, one of Britain's fastest growing companies in the field of Data Communication Systems is expanding its highly successful sales force. If you believe you have what it takes to make a success of the sales environment we would like to hear from you.

Working from company supplied leads in established territories in S.E. England and Wales you will advise customers on system requirements and implement your solutions in this rapidly expanding market. Naturally, FULL PRODUCT TRAINING and PROFESSIONAL SALES TRAINING will be provided. Ideally aged 25-35, with a sound background in either Electrical/

Data Communication Systems

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The outstanding remuneration package consists of a high basic salary,

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Male or female applicants should apply in the first instance with

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Mercuri Urval Ltd., 1 College Road, Harrow, Middlesex, HA1 1YZ or ring

him on 01-863 8486, quoting ref 820.

Mercuri Urval

SALES BIT

How to become a head-hunter - 2

**Recruiters who
exploit human
weaknesses**

LAST week I wrote about my reactions to the role of the "head-hunter" - the type of recruiter who makes his living by approaching individuals directly in accordance with a character/experience/company profile rather than advertising or resorting to a normal agency operation.

Ironically, this method of recruitment is often more financially rewarding and easier than the more socially acceptable advertising and/or agency-based operation.

I also believe it to be corrupt and demeaning because it exploits the weakness of human nature. Who can resist the ego boost of a letter or telephone call which suggests you have been "identified" as an (or even the) individual with the special talents for an important challenging and highly rewarded job? It confirms a tenuous personal belief (or is it hope?) that one has great potential yet to be unleashed and now someone has had the wit to discover and acknowledge it!

It is a glimpse of the greener fields and jam tomorrow and only a fool, it appears, would say "No thank you, I'm not interested." The more senior the "target" recruit, the easier the task of identification. It's a function of the logistics of the company pyramid - the higher you go, the fewer of a given job function there are around.

Identifying lesser victims such as salesmen is more time-consuming for the head-hunter, because individual names do not immediately spring to mind, and discovering them is relatively laborious, but a task that creates few intellectual demands.

There are two basic strategies: The "roll-over" recruiter simply interrogates his candidate files in the context of the appropriate geographic location, product knowledge, applications experience, etc. makes a list of names and telephone numbers, then it's into the "Hello Fred, a really special job opportunity has just cropped up that I simply had to call you about."

The head-hunter, with no permanent personnel files or the "roll-over" recruiter with no appropriate candidates has a bigger problem, but not an insurmountable one. He simply identifies his client's principal competitors, contacts the appropriate branch office and chats up the telephone operator.

"Who's your salesman for North London?" or "I'm trying to re-establish contact with one of your salesmen, but I've forgotten his name!" and other colloquial gems usually generate a crop of names.

Then it's simply a matter of "Good morning Mr. Salesman, you have been identified by a substantial and progressive organisation as a strong contender for an excellent career opportunity that has just arisen in your area."

Unfortunately, the computer industry has been dramatically short of accomplished salespeople from its very beginning and the situation is no better today - probably worse. This imbalance of demand over supply is the ideal scenario for the head-hunter and clearly attracts the kind of person who enjoys this sort of challenge.

It's a process that I find unacceptable, except, perhaps, in very special circumstances that may exist at high executive level, ie people who ought to have sufficient experience to handle a direct approach. At the territory sales level I consider it unprofessional practice that should be treated by individuals with the contempt it deserves.

Having said all that, just consider the implications of direct approach recruitment from the employer's point of view purely in terms of its basic benefits and disadvantages. In its favour it has the apparent benefits of avoiding the vagaries of Press advertising and is directed at individuals with directly relevant experience to the job vacancy. The corresponding disadvantage is that the scope of search is limited to the head-hunter's sphere of industry knowledge and individual contact, which is unlikely to be absolute.

Secondly, a job which is not advertised automatically excludes candidates outside the head-hunter's influence and, more importantly, those up-and-coming people who are not currently in the given job function, but have the qualifications to carry out the job, and see it as a bigger opportunity and challenge than someone already operating in the same capacity.

Another problem can be credibility. Do you really want to work for a company that is prepared to rip you out of your current employment in order to secure an easy route to solving what is usually a self-inflicted management problem?

There is already too much voluntary traffic in personnel within the computer industry (although the recession has quietened things down a lot) without stimulating additional movement to meet the short-term objectives of employers and head-hunters.

I cannot see any benefit in the long term to any party in the head-hunting syndrome other than the head-hunter himself.

So I hope you will perceive a considerable difference between a head-hunter and a recruitment consultant and understand why the latter may react negatively to being given the wrong lead.

I also hope you now have a better appreciation of the head-hunter's methods and motivation and will have the strength to say "Not today, thank you" the next time he calls - even if you secretly hope he will.

Alan Williams

**PUZZLE
ANSWER**

THE reversal may be accomplished in 10 moves as follows: 2 to 1, 5-2, 3-5, 6-3, 7-6, 4-7, 1-4, 3-1, 6-3, 7-6.

